InterPACK/ICNMM

International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) and the International Conference on Nanochannels, Microchannels and Minichannels (ICNMM)

PROGRAM

July 6-9, 2015
San Francisco, CA

The American Society of Mechanical Engineers (ASME)

This is the first time that the International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) and the International Conference on Nanochannels, Microchannels and Minichannels (ICNMM) will hold their conferences together.

InterPACK is the premier international forum for exchange of state-of-the-art knowledge in research, development, manufacturing, and applications of electronic packaging, MEMS, and NEMS. It is the flagship conference of the ASME Electronic and Photonic Packaging Division (EPPD). The InterPACK Conference Series was founded in 1992, by Professor Avi Bar Cohen, as the ASME-JSME Joint Electronic Packaging Conference. It was renamed InterPACK in 1995, and has been occurring biannually since then. We are grateful for the continued co-sponsorship of The Japan Society of Mechanical Engineers (JSME) from the beginning of the InterPACK series.

ICNMM, sponsored by the ASME Heat Transfer and Fluids Engineering Divisions, provides a global platform for researchers to exchange information and identify research needs in the emerging areas of microscale and nanoscale transport processes and systems encompassing many engineering and bio-medical disciplines. In particular, participation from the young researchers is emphasized. The field of microscale transport processes and microfluidics is becoming extremely important in a number of emerging technologies. It has already found a number of practical application in biological sciences (DNA detection), microprocessor chip cooling, pharmaceutical sciences (micromixers and micro-reactors), optics (switching devices), fuel cells (gas diffusion channels and gas diffusion layer), micro-power generation, microturbines, etc. The conference provides a unique forum for interdisciplinary researchers to exchange ideas and come up with novel techniques. This will be the thirteenth international conference on this topic.

InterPACK / ICNMM is a truly integrated event. While there are some technical tracks uniquely tailored to each group, two technical tracks as well as Panel Discussions, Workshops and Tutorials, and a Student Poster Competition are jointly organized. A series of "Technical Talks" featuring subject matter experts speaking on the most relevant and influential topics of the day are also jointly organized. The result is a technical program featuring 580 technical presentations organized by 13 technical track committees comprised of leading scientists and engineers from industrial companies, government laboratories, and academic institutions throughout the world.

We will continue to hold the Student Poster Session and Contest, a featured event started (at InterPACK) in 2007. Students from academic institutions world wide are given the opportunity to showcase their research in a more personal "1-on-1" forum with conference participants from both industry and academia. This exposure is usually in addition to the technical session presentation forum as the students are required to participate in both areas. The poster session is held alone with no other events in parallel so the students can garner maximum attention. This year we have a record 85 students participating. And thanks to the generosity of the Electronics and Photonics, Heat Transfer, and Fluid Engineering Divisions, exhibitors and sponsors, and the National Science Foundation, participating students will receive financial compensation of up to $900 each to defray the cost of attending the conference.

Our special gratitude is extended to all of the volunteers whose hard work have made this conference happen including: the Organizing Committee consisting of the General Committee Organizers; the Technical Program Committee consisting of Technical Track, Topic, and Session Organizers; the InterPACK Industrial Advisory Board; InterPACK and ICNMM Advisory Committies; the Plenary Speaker; Panel Moderators and Panelists; Workshop and Tutorial Instructors; Invited "Tech Talk" Speakers; Technical Paper Authors and Co-Authors; "Technical Presentation Only" Speakers; and, finally, to all the technical reviewers whose contributions ensured the quality of the conference. We would also like to thank Stacey Cooper, ASME Publishing, for her dedication in managing the ASME conference webtool. Last and certainly not the least, our sincere thanks go to Stephen Crane from the ASME who served as the Conference Administrative Chair, and capably coordinated all the activities related to conference management and logistics.

We encourage you to enjoy the wide variety of technical venues that InterPACK / ICNMM has to offer in beautiful Downtown San Francisco.

With our very best wishes to the conference attendees!

Michael J. Ellsworth, Jr.

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2001	Y.C. Lee
2003	Donald Price
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In Memory of Dr. Donald Price

It is with great sadness that we share with you the passing of our colleague and dear friend, Dr. Donald C. Price, on April 14, 2015 in Dallas, Texas. He is survived by Barbara, his wife of 57 years; his children Donald Craig Price Jr., Susan Price Hartshorne and her husband Jeffrey Lee Hartshorne , Karen Price Wheeler and her husband Robert Gregory Wheeler; and his grandchildren, Lindsey Kay Price, Hayden Christopher Price, Mitchell Christopher Hartshorne, Stephanie Ann Hartshorne, Matthew Lee Hartshorne, Karli Kristine Wheeler, & Cody Price Wheeler. Don made significant contributions in the area of thermal management of electronic systems and his contributions extend to both academia and industry. He was also a leader in ASME professional society activities having served in numerous leadership roles.

Don received the BSME and the MSME from SMU in Dallas, Texas, and the PhD from Oklahoma State University in Stillwater, Oklahoma. Dr. Price served as a member of the faculty of the Mechanical Engineering Department at Southern Methodist University from 1965 to 1970 and has served as an Adjunct Professor at in that Department since 1985. He has also served as an Adjunct at the University of Texas at Arlington. Don subsequently was promoted to a Principal Engineering Fellow rank in the Thermal Technology Branch of Raytheon Network Centric Systems in McKinney, Texas. In that capacity, Dr. Price was responsible for the thermal management of a wide range of Raytheon products, including airborne missile systems, airborne- and ground-based electro-optics systems, and phased-array radar systems. This activity involved thermal model simulations of military systems and the computer-aided design of coldplates and heat exchangers. The work also included the thermal design of airborne electronic pods cooled by vapor-cycle or air-cycle refrigeration systems.

Dr. Price served on a number of University Industry Advisory Boards, including the SMU Mechanical Engineering Department Board for Knowledge. Dr. Price was a member of several technical and professional societies: ASME, IEEE, AIAA, IMAPS, TSPE, NSPE, and ASEE. The ASME North Texas Section (NTS) Electronic and Photonic Packaging Division (EPPD) selected Dr. Price as Engineer-of-the-Year for 1997, and the ASME NTS selected him as the Engineer-of-the-Year for 1998. The Dallas Chapter of the Texas Society of Professional Engineers honored Dr. Price as Engineer-of-the-Year for 2001-02. Dr. Price was further honored as an ASME Fellow in 2002 and was designated as an ASME Life Fellow in 2004. Dr. Price also served as Chairman of the ASME North Texas Section Industry Advisory Board.

At the national level of ASME, he has served as a member of the K-16 Committee on Heat Transfer in Electronic Systems since 1996. He served as Vice-Chair of this committee from 2000 to 2003 and as Chairman from 2003-05. Dr. Price has been a member of the ASME Electronics and Photonics Packaging Division (EPPD) since 1996. He became a member of the EPPD Executive Committee in 2001 and served the committee as Secretary from 2002-03, Treasurer from 2003-04, Vice-Chairman from 2004-05, and is currently serving as Chairman for 2005-06. Dr. Price served the ASME InterPack Conference as a Session Chair in 1997, Thermal Management Track Chair in 1999, Conference Program Chair in 2001, and General Chair of the conference in 2003. Dr. Price currently served as a technical reviewer for the ASME J. of Heat Transfer and the ASME J. of Electronic Packaging. As an employee of Raytheon, Dr. Price has been issued five US patents and three foreign patents. In addition, he was co-inventor of one US Patent Application, which has been filed and is currently pending. He has published numerous technical papers in referred journals and conference proceedings. He has made technical presentations at society conferences and numerous presentations on professionalism (Ten Keys to a Successful Engineering Career) to a variety of engineering and student groups.

Words can't express how much Don will be missed by his family, his colleagues, and his friends. We can only hope that his memory will continue to be an inspiration to all who knew him.

INTERPACK / ICNMM WELCOME 2
GENERAL INFORMATION 5
SPONSORS / EXHIBITORS 6
SPECIAL EVENTS 8
KEYNOTE 9
AWARDS 10
PANELS 13
WORKSHOPS 21
TECH TALKS 22
TUTORIALS 34
PROGRAM OVERVIEW 40
TECHNICAL SESSIONS AT A GLANCE 42
TECHNICAL SESSIONS 48
AUTHOR INDEX 124
INTERPACK INDUSTRIAL ADVISORY BOARD (IAB) 193
NOTES 194
TRACK ORGANIZERS 195
TOPIC ORGANIZERS 196
ACKNOWLEDGEMENTS 204
HOTEL FLOOR PLAN 205

ACKNOWLEDGEMENT

InterPACK/ICNMM 2015 program will feature more than 600 presentations consisting of 400 technical papers and 200 technical presentations only (TPOs) as well as 10 outstanding panels, 30 technology/science seminars by distinguished scholars, 30 outstanding invited session speakers, keynote talk by prof. Arun Majumdar (Stanford University), four tutorials, student poster competition session, women career panel and graduate student workshop, an finally ASME Journal of Electronic Packaging (JEP) workshop.

Travel grants to all the students who participate in the poster session competition is provided by generous support of the InterPACK 2015 community, InterPACK/ICNMM sponsors & exhibitors (Gold: Microsanj, Intel, Future Facilities, GE; Silver: IBM, Mentor Graphics, World Scientific, HP, S3IP, Outlast, ANSYS, Innovative Research, Hysitron, BAE systems, Journal of Electronic Packaging), academic centers and institutions, and National Science Foundation (NSF) as well as ASME Electronic and Photonic Packaging Division (EPPD) and Heat Transfer Division (HTD) and Fluids Engineering Division (FED).

HOTEL

Centrally located, this luxury San Francisco hotel is a short cable car trip from the bustling Downtown, Financial District, Union Square and Fisherman's Wharf. In fact, Fairmont San Francisco hotel is the only spot in San Francisco where each of the City's cable car lines meet.

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REGISTRATION

Registration will be located inside the Terrace Room on the Terrace Level. The hours are:

Monday, July 6, 2015:	7:00am – 6:00pm
Tuesday, July 7, 2015:	7:00am – 6:00pm
Wednesday, July 8, 2015:	7:00am – 5:00pm
Thursday, July 9, 2015:	7:00am – 12:30pm

NAME BADGES

Please wear your name badge at all times. Admission to all conference functions will be by the badges only (unless noted otherwise). Your badge also provides a helpful introduction to other attendees.

TICKETED FUNCTIONS

Cost of all events are covered in the general registration. If you plan on bringing a guest to the daily lunches you must purchase a ticket for them. You can do this at the registration desk.

CONFERENCE PRESENTATIONS

Registered attendees will receive online access indefinitely to the papers accepted for presentation at the conference. The official conference archival proceedings will be published after the conference and will not include those papers that were not formally presented on site at the conference. The official proceedings are registered with the Library of Congress and are submitted for abstracting and indexing. They will also be published in the ASME Digital Collection.

EMAIL ACCESS

If you are staying at the Fairmont, high speed internet access is complimentary in your sleeping room.

REGISTRANTS WITH DISABILITIES

Whenever possible, we are pleased to make arrangements for registrants with disabilities. Advance notice may be required for certain requests. For on-site assistance, please visit the registration area and ask to speak with a conference representative.

HAVE QUESTIONS ABOUT THE MEETING?

If you have any questions or need assistance, an ASME representative will be located at the registration area inside of the Terrace Room on the Terrace Level.

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For a decade, Future Facilities has provided computational fluid dynamics (CFD) software and consultancy services to the world's largest data center owner-operators and to the industry's leading consultancies. With global offices, our managed engineering services and modeling software are relied on to deliver unique insight into the current and future performance of our clients' mission critical data centers. We call our approach 'predictive simulation'.

Microsanj, headquartered in Silicon Valley, California, is a leading supplier of high resolution, Thermoreflectance Imaging Analysis systems, tools, and consulting services. The thermal imaging systems are based on the optical thermoreflectance principle coupled with digital signal processing and advanced software algorithms to support microelectronic and optoelectronic component thermal characterization for thermal design validation, defect analysis, and reliability analysis. Microsanj currently offers the highest resolution thermal imaging systems on the market. For more information visit: www.microsanj.com

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World Scientific Publishing is one of the leading scientific publishers in the world, and the largest international scientific publisher in the Asia-Pacific region. Our mission is to develop the highest-quality knowledge-based products and services for the academic, professional, research and student communities worldwide. We publish more than 550 books and 125 journals a year in various fields of science, technology, medicine, and business and economics. We are also on the cutting edge of electronic publishing as all of our journals and most of books are available in electronic format.

BAE Systems provides some of the world's most advanced, technology-led defense, aerospace and security solutions, employing a large workforce in over 40 countries. Working with customers and partners, BAE Systems develops, engineers, manufactures and supports products and systems that deliver military capability, protect national security and people and keep critical information and infrastructure secure.

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IBM has maintained a research laboratory in Switzerland since 1956, located on its own picturesque campus in the leafy suburb of Ruschlikon near Zurich since 1963 - the original location was in the neighboring town of Adliswil. The IBM Zurich Lab is proud of its multicultural and interdisciplinary research community, which includes a combination of permanent research staff members, graduate students and post doctoral fellows representing 45 nationalities. Also located at the Zurich Lab is the Client Center, an executive briefing facility as well as a forum where IBM integrates and demonstrates leading-edge technology prototypes and solutions.

IBM Research - Zurich is world-renown for its outstanding scientific achievements -- most notably Nobel Prizes in Physics in 1986 and 1987 for the invention of the scanning tunneling microscope and the discovery of high-temperature superconductivity, respectively. Other key innovations include; the Trellis-coded modulation, which revolutionized data transmission over telephone lines; Token Ring, which became a standard for local area networks and a highly successful IBM product; the Secure Electronic Transaction (SET) standard used for highly secure payments; and Smartcard JavaCard technology.

IBM scientists in Zurich are not only focused on fundamental research, but also to exploring and creating innovative industry and customer-oriented solutions based on several key areas including; cloud, Big Data analytics, security, mobility and social engagement.

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Journal of Electronic Packaging

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Binghamton University's Small Scale Systems Integration and Packaging Center (S3IP) coordinates the effort of five research centers and analytical lab to serve industrial partners in problem solving and research for microelectronics packaging, failure analysis, reliability improvement; data center energy efficiency improvement; commercialization of roll-to-roll printed flexible electronics; thin film material systems for photovoltaic and thermoelectric energy conversion and supercapacitors; fundamental research on Li-ion battery capacity; characterization of materials, surfaces, interfaces, and manufactured electronic assemblies.

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InterPACK/ICNMM

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San Francisco, CA

The American Society of Mechanical Engineers (ASME)

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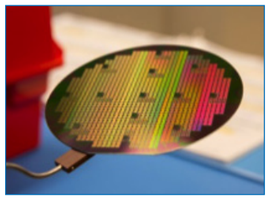

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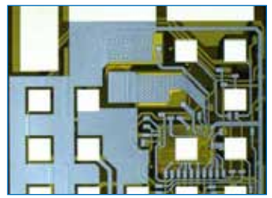

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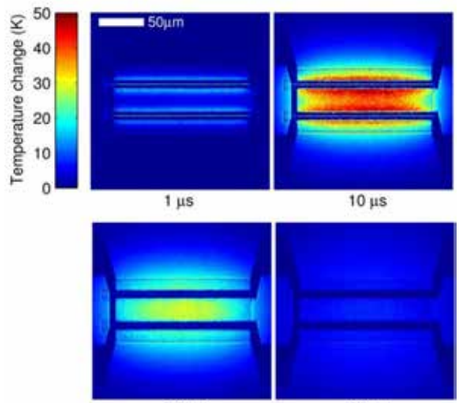

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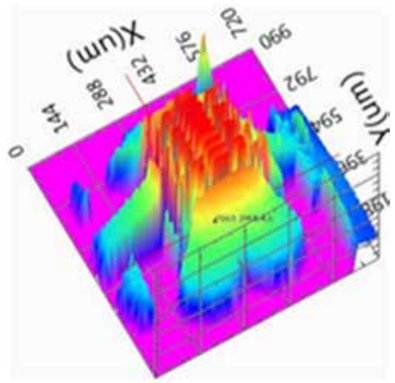

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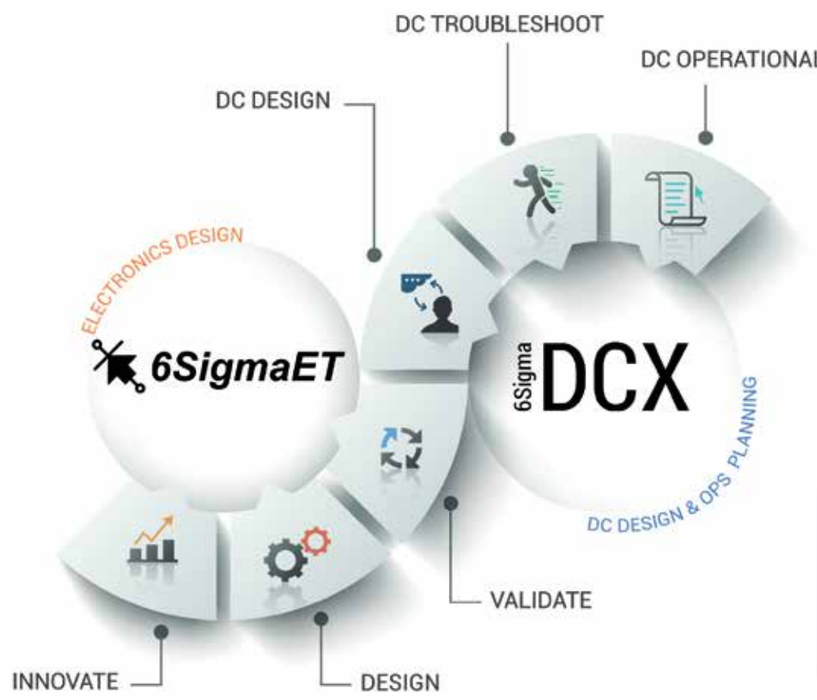

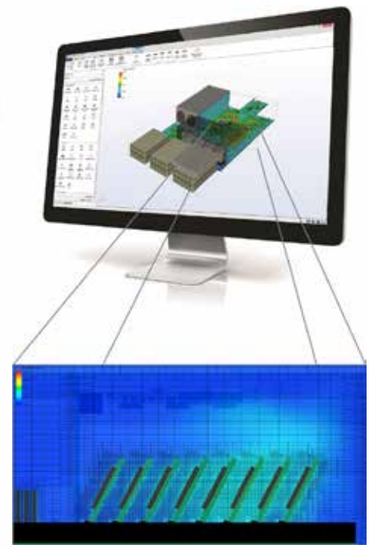

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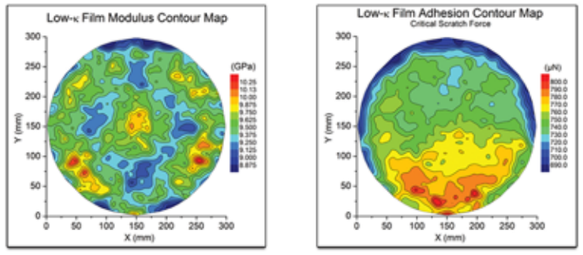

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SPECIAL EVENTS

AUTHORS BREAKFAST
Vanderbilt Room

Breakfast will be provided from Tuesday to Thursday to those authors who are presenting their paper(s) on that day. The breakfast will be held at 7:00am- 7:45am in the Vanderbilt Room in the Terrace Level. Please stop by to network with your fellow authors and organizers.

KEYNOTE LUNCHEON
Grand Ballroom

The Keynote Luncheon will be held on Tuesday, July 7 from 11:00am- 1:00pm and will feature Professor Arun Majumdar from Stanford University. Tickets are required for guests/spouses.

AWARDS LUNCHEON
Grand Ballroom

The Awards and Committee Recognition Lunch will be held on Wednesday, July 8th from 11:00am – 1:00pm. The InterPACK Achievement Award talk and the ICNMM Award will be bestowed. Join in commemoration and celebration of the hard work and excellence of your fellow attendees. All attendees are welcome. Tickets are required for guests/spouses.

PAPER AND POSTER AWARDS LUNCHEON
Grand Ballroom

The luncheon will be held on Thursday, July 9th from 11:00 am – 1:00 pm. Enjoy socializing with attendees and take the time to meet the conference organizers. Tickets are required for guests/spouses.

STUDENT POSTER SESSION
July 8th 6:15 PM -9:00 PM Grand Ballroom

The InterPACK and ICNMM Student Poster Session is a featured event, with no other parallel sessions or functions. Participation in the poster session was open to all undergraduate and graduate students who are lead authors of InterPACK and ICNMM papers. During the session, judging will be performed for several Poster Contest Awards to be chosen by members of the Poster Session Awards Committee. Award recipients will be recognized at the Awards Luncheon on Thursday, July 9, 2015. Travel grants for participants in the student poster competition have been made possible due to the generous financial support by the ASME electronic and Photonic Packaging Division, ASME Fluids Division, ASME Heat Transfer Division, ASME Fluids Engineering Division, the National Science Foundation, and the conference sponsors.

COMMITTEE MEETINGS

Monday, July 6

ITherm 2016 Meeting
8:30pm – 9:30pm French Room, Lobby Level

IMECE 2016 Committee Meeting
9:30pm – 10:30pm California Room, Mezzanine

Journal of Electronic Packaging
7:00pm - 8:00pm French Room, Lobby Level

Tuesday, July 7

ICNMM 2016 Planning Meeting
6:30pm – 7:45pm State Room, Mezzanine

InterPACK Advisory Board Meeting (by invitation only)
7:45am – 9:15am State Room, Mezzanine

Wednesday, July 8

Electronic and Photonic Packaging Division K-16 Committee
5:00pm – 6:00pm State Room, Mezzanine

Electronic and Photonic Packaging Division (closed)
7:45pm- 9:15pm State Room, Mezzanine

Thursday, July 9

InterPACK / ICNMM Wrap Up + Future Planning Meeting
3:00pm - 4:30pm State Room, Mezzanine

PRESENTERS PRACTICE
Intersect Room, Arcade Level

Authors and speakers who wish to rehearse their presentation will have the opportunity to do so at their convenience. The Intersect Room will be available during registration hours and will be equipped with a LCD Projector and Screen.

KEYNOTE PRESENTATION

THE TSUNAMI OF GLOBAL TRENDS

Tuesday, July 7, 2015
Grand Ballroom **11:00am – 1:00pm**

Arun Majumdar

Stanford University

It is often said that it is very hard to predict the future, and this is indeed true. Yet, there are some unmistakable global trends that the world is currently following, which are unlikely to dramatically change in the next decade or two because of simply global inertia. These include: population growth; urbanization; global trade; climate and energy; water; environment; digitization; and education. Knowledge of how these trends are likely to evolve will offer a glimpse of the scenarios of what the world could possibly be in the future, not how it will definitely be. Such scenarios could then be used to identify both significant challenges as well as opportunities for technologies, products and services to make real world impact on people and our ecosystem. What are perhaps the most difficult to comprehend or predict are the opportunities and challenges that arise from second or third order effects of these trends as well as those that lie at the intersection of two or three trends. In this talk, I will offer some data on how these trends are evolving and some thoughts on technologies, products and services that the world may need in the future.

Arun Majumdar is the Jay Precourt Professor at Stanford University, where he serves on the faculty of the Department of Mechanical Engineering and is a Senior Fellow of the Precourt Institute for Energy. Prior to joining Stanford, he was the Vice President for Energy at Google, where he created several energy technology initiatives and advised the company on its broader energy strategy.

In October 2009, Dr. Arun Majumdar was nominated by President Obama and confirmed by the Senate to become the Founding Director of the Advanced Research Projects Agency - Energy (ARPA-E), where he served until June 2012. Between March 2011 and June 2012, Dr. Majumdar also served as the Acting under Secretary of Energy, and a Senior Advisor to the Secretary of Energy. He currently serves on the US Secretary of Energy's Advisory Board, the Councils for the National Academy of Engineering and the Electric Power Research Institute, as well as the Science Board of the Stanford Linear Accelerator Center (SLAC) and the Oak Ridge National Laboratory. He is a member of the International Advisory Panel for Energy of the Singapore Ministry of Trade and Industry and the US delegation for the US-India Track II dialogue on climate change and energy. He was recently appointed by the State Department as a US Science Envoy with an emphasis on energy and innovation in Poland, the Baltics and neighboring region.

Prior to joining the Department of Energy, Dr. Majumdar was the Almy and Agnes Maynard Chair Professor of Mechanical Engineering and Materials Science and Engineering at the University of California, Berkeley and the Associate Laboratory Director for Energy and Environment at Lawrence Berkeley National Laboratory. His research career includes the science and engineering of nanoscale materials and devices as well as large engineered systems. While his focus on nanoscale thermal transport has continued, his current research has expanded on the direct use of high-energy particles resulting from nuclear decay and reactions for power generation and other engineering applications. Dr. Majumdar is a member of the National Academy of Engineering and the American Academy of Arts and Sciences. He received his bachelor's degree in Mechanical Engineering at the Indian Institute of Technology, Bombay in 1985 and his Ph.D. from the University of California, Berkeley in 1989.

INTERPACK ACHIEVEMENT AWARD TALK

Wednesday, July 8, 2015

Grand Ballroom **11:00am – 1:00pm**

Dr. Bahgat Sammakia

Distinguished SUNY Professor

The prestigious InterPACK Achievement Award is bestowed once every two years at the biannual ASME InterPACK Conference to an individual who has demonstrated excellence and international recognition in the area of research and development related to electronic packaging, as well as service to the technical community at large. They must also have sustained participation and leadership in the InterPACK conference. The award is conveyed by the InterPACK Conference Leadership and the ASME Electronic and Photonic Packaging Division (EPPD).

Previous winners include:

1999 Alan Kraus, Naval Postgraduate School

2001 Wataru Nakayama, ThermTech International and Tokyo Institute of Technology

2003 Richard Chu, IBM Corporation

2007 Avram Bar-Cohen, University of Maryland

2009 Dereje Agonafer, University of Texas at Arlington, and William T. Chen, ASE Corporation

2011 Yogendra Joshi, Georgia Institute of Technology

2013 Y.C. Lee, University of Colorado

"Energy Smart Electronic Systems, a Consortium Dedicated to Reducing the Energy Losses in Data Centers"

Data centers consume about 2.5% of the total electrical energy produced in the United States, and that number is projected to grow for the foreseeable future due to increasing demand for online services for everything from communications to smart mobile devices to streaming data generated by distributed sensors amongst many other exciting growing applications. However in many cases data centers are designed to handle the peak loads, but they often operate at 40-60 percent of that or even lower which makes them highly inefficient. The cooling solutions are also over-provisioned, which leads to yet more waste. Nationwide, it is estimated that in 2013, data centers consumed 91 billion kilowatt-hours of electrical energy, and they will be using 139 billion kilowatt-hours by 2020, a 53% increase. To put these numbers into perspective, the 2013 energy used by data centers in the US alone was equivalent to the annual output of 34 large 500-megawatt coal-fired power plants. Much of that energy is waste and is harmful to the environment and to business. The Energy Smart Electronic Systems (ES2) is a National Science Foundation Center that brings together four academic institutions, Binghamton University, Villanova University, the University of Texas at Arlington and the Georgia Institute of technology in partnership with government, industry and academia to develop systematic methodologies for efficiently operating data centers, by controlling resources and managing workloads to achieve optimal energy consumption. The vision for the center is to enable self-sensing and self-regulating data centers that dynamically optimize energy consumption at any required performance level.

Speaker: Dr. Bahgat Sammakia, Distinguished SUNY Professor

Biography: Dr. Bahgat Sammakia is the vice president for research at Binghamton University and director of the NSF-IUCRC on Energy Smart Electronic Systems (ES2) and Binghamton University's Small Scale Systems Integration and Packaging Center (S3IP), a New York State Center of Excellence. He is a Distinguished SUNY professor of mechanical engineering in the Thomas J. Watson School of Engineering and Applied Science. Dr. Sammakia earned his bachelor's degree in mechanical engineering from the University of Alexandria, Egypt, and his master's and doctorate in mechanical engineering from the State University of New York at Buffalo. He was a post doctoral fellow at the University of Pennsylvania. Dr. Sammakia has over 200 published papers in refereed journals and conference proceedings, has contributed to several books in the areas of heat transfer and electronics packaging. He also holds 21 US patents and 12 IBM technical disclosures in the area of electronics packaging. Dr. Sammakia was the General Chair for the ITherm 2006 conference and the Interpack 2012 Conference. Dr. Sammakia is a Fellow of both the IEEE and the ASME.

1) The ASME ICNMM 2015 Outstanding Early Career Award is presented to

Matthew McCarthy

Drexel University

to acknowledge his significant innovations in the study of phase change heat transfer, specifically the manufacturing of multiscale surfaces and the phenomenological interpretation of boiling phenomena.

2) The ASME ICNMM 2015 ICNMM Prominent Researcher Award is presented to

Norbert Kockmann

Technical University of Dortmund

in testimony of his outstanding research record at the interface of microstructured devices and chemical processes, including the edition and authorship of two monographs; and for exceptional service contributions to every single edition of the International Conference on Nanochannels, Microchannels and Minichannels.

3) The ASME ICNMM 2015 ICNMM Outstanding Leadership Award is presented to

Ali Beskok

Southern Methodist University

in testimony of his exemplary leadership, visionary ideas and tireless support towards the growth and success of the International Conference on Nanochannels, Microchannels and Minichannels.

09-Panels — Pavilion Room, Lobby Level

July 7, 7:45-9:15 AM	9-1-1 Two Phase Boiling Computational Modelling Challenges (Panel)
July 7, 2:45-4:15 PM	9-1-2 Mobile Thermal Management (Panel)
July 8, 9:30-11:00 AM	9-1-3 Future outlook of M/NEMS technologies in Wearables and the Internet of Things (IoT) (Panel)
July 8, 2:45-4:15 PM	9-1-4 Impact of Microfluidics and Lab-on-a-Chip on Bio: Challenges and Opportunities (Panel)
July 7, 1:00-2:30 PM	9-1-5 The role of Additive Manufacturing on Next Generation Thermal Management Systems (Panel)
July 8, 4:45-6:15 PM	9-1-6 Embedded Cooling – IceCool APPs (Panel)
July 9, 9:30-11:00 PM	9-1-7 Is Die-package Co-design the Key for Cost-effective Multi-die ICs? (Panel)

10-Technology/Science Talks — French Room, Lobby Level

July 7, 4:45-6:45 AM	10-1-1 Low Dimensional Materials Characterization & Applications (Technical)
July 8, 7:45-9:15 AM	10-1-2 Power Electronics and Electric Machines (Technical)
July 7, 9:30-11:00 AM	10-1-3 Scalable and Integrated Nanotechnology (Technical)
July 8, 1:00-2:30 PM	10-1-4 High Temperature & Harsh Environment Electronic Devices and Packaging (Technical)
July 7, 2:45-4:15 PM	10-1-5 Tech talk on Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices (Technical)
July 9, 9:30-11:00 AM	10-1-6 Tuning Transport Phenomena Through Nanoscale Interfacial Engineering (Technical)
July 9, 7:45-9:15 AM	10-1-7 Mechanistic considerations and Enhancement Techniques for Flow Boiling Heat Transfer in the Microscale (Technical)
July 7, 4:45-6:15 PM	10-1-8 Microfluidic Enabling Technology for Material Synthesis and Cell Assays (Technical) - EMPIRE ROOM
July 9, 1:00-2:30 PM	10-1-9 Thermal Challenges in Recent Advancements in GaN Electronics (Technical)
July 6, 5:30-7:00 PM	10-1-10 Thermal, Thermo-mechanical challenges in Packaging of Semiconductor Lasers (Technical)
July 6, 3:30-5:00 PM	10-1-11 Data Center - Thermal management (Technical)

11-Tutorials

July 6, 3:00-7:30 PM	11-4-1 Tutorials: Reliability Challenges in Microelectronics Packaging	Garden Room, Lobby Level
July 6, 3:00-7:30 PM	11-4-2 Tutorials: Two Phase Boiling Computational Modelling Challenges	California Room, Mezzanine
July 7, 4:45-6:45 PM	11-4-3 Tutorials: Thermofluid Characteristics of High Vapor Fraction Microgap Flow in Embedded Cooling Configurations	California Room, Mezzanine
July 7, 4:45-6:45 PM	11-4-4 Tutorials: Thermal Management of LED Devices and Systems	Garden Room, Lobby Level

9-1-1 Two Phase Boiling Computational Modelling Challenges

Pavilion Room, Lobby Level — **July 7, 7:45-9:15 AM**

Topic Organizer: John Thome, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

John R. Thome is Professor of Heat and Mass Transfer at the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, where he directs some 20 post-docs and PhD students. He is the author of five books and is editor of the new 8-volume series Encyclopedia of Two-Phase Heat Transfer and Flow, coming out in April 2015. He received the ASME Journal of Heat Transfer Best Paper Award in 1998, the UK Institute of Refrigeration's J.E. Hall Gold Medal in 2008 for his work on microscale refrigeration heat transfer, the 2010 ASME Heat Transfer Memorial Award for his career work on flow pattern based heat transfer models for macro and micro-scale flows, the 2013 InterPack Conference Best Paper Award, the 2014 ASME Journal of Electronic Packaging Best Paper Award, and other recent awards.

Topic Co-Organizer: Kaiser Matin, Technical SETA, DARPA / MTO

Kaiser Matin is a Senior Principal Engineer at Systems Planning Corporation in Arlington, VA. Kaiser provides strategy and technology support as a DARPA/MTO Technical SETA contractor. He is an expert in thermal design and heat transfer technologies and performs 3D thermal FEA/CFD analysis to support, evaluate, and verify various phases of technology readiness and maturation. He served as a session co-chair for ITHERM and has authored or co-authored several peer reviewed technical publications. Kaiser is a member of IEEE and ASME. He holds three US patents. Previously, Kaiser was a Staff Engineer at United Technologies and was responsible for the thermal design of airborne electronic boxes, motors and generators. Kaiser received his MS and PhD degrees from Texas Tech.

Abstract: Models capturing the physics of two phase flow phenomena and heat transfer in microchannels are inherently complex. Some of the challenges are: modeling the transitions between the bubble/slug/annular flow regimes, dealing with both adiabatic and diabatic flows, predicting CHF, bubble growth and coalescence, interface tracking/capturing, system pressure drops, conjugate heat transfer, estimating near wall heat transfer coefficients, etc. Currently, the numerical techniques employed to address these challenges are: VOF (volume of fluid), LSM (level set method), CIP (cubic interpolated method), lattice Boltzmann method, CSF (continuum surface force) method, phase change method, etc. There is no standard best practice established using existing commercial CFD tools to solve these challenges to make these models run faster, cheaper and easier to use. The current call for two-phase numerical papers focuses on the above and related topics, and to finding the existing gaps that needs to be filled in this area for better understanding of microchannel two phase flow and heat transfer.

PANELISTS

Prof. Sumanta Acharya, University of Memphis, TN

Dr. Sumanta Acharya is Chair of Mechanical Engineering and the first holder of the Ring Companies endowed Chair at the University of Memphis. For the past four years (2010-2014) he was on assignment at the National Science Foundation (NSF) as Program Director of the Thermal Transport Processes Program in Engineering. His research expertise is in the field of Thermal-Fluid Sciences, Gas Turbine Heat Transfer and Gas Turbine Combustion. He is widely published with over 400 refereed technical articles.

Dr Mirco Magnini Laboratoire de Transfert de Chaleur et de Masse (LTCM) - Laboratory of Heat and Mass Transfer, EPFL, Lausanne, Switzerland

Dr Magnini is currently a post-doctoral researcher at LTCM. His research interests include multiphase computational fluid dynamics with commercial and opensource solvers, physical modeling of two-phase flows in microchannels, and interfacial phenomena

Prof. Mario Trujillo of the University of Wisconsin

The Multiphase Computational Fluid Dynamics group at University of Wisconsin-Madison is led by Professor Mario F. Trujillo and is associated with the Engine Research Center, Mechanical Engineering and Engineering Physics Departments. His research interests include a variety of multiphase flow problems ranging from micron-size particles transported in analytical flow fields to various industrial liquid spray applications.

Prof. Michael Podowski Department of Mechanical, Aerospace and Nuclear Engineering at RPI, and Director of Center for Multiphase Research. His research interests include fundamentals and applications of multiscale multiphase flow and heat transfer, computational multiphase flow dynamics (CMFD), dynamics and stability of multiphase systems and nuclear reactor thermal-hydraulics and safety. He has about 300 technical publications, including 7 books/book-chapters and 60 journal papers. He is Fellow of American Nuclear Society and recipient of the 2014 ANS Compton Award

Prof. Amir Riaz, Mechanical Engineering, University of Maryland, MD

Dr. Amir Riaz received his Master's degree in Aerospace Engineering from the University of Southern California in 2001 and his doctorate in Mechanical Engineering from the University of California Santa

Barbara in 2003. He was subsequently a physical sciences research associate at Stanford University in the department of Energy Resources Engineering. He is currently an Assistant Professor of Mechanical Engineering at the University of Maryland, with a research program focusing on numerical simulations of multiphase flows and flows in porous media, as well as carbon dioxide sequestration and enhanced oil recovery.

9-1-2 Mobile Thermal Management

Pavilion Room, Lobby Level **July 7, 2:45-4:15 PM**

Topic Organizer: Victor Chiriac, Qualcomm, As the Thermal Technologist for Qualcomm Inc in San Diego, California, Victor Chiriac is defining the company overall thermal technology roadmap for developing state of the art cooling solutions at the die, electronic package and system level product implementation. Victor is the Editor of Qualcomm's Monthly Thermal Newsletter/Web Publication and the organizer of the highly popular Qualcomm Thermal Summit. In 2014 he was elected ASME Fellow. An inventor with 9 issued U.S. patents, 6 in review, 2 trade secrets and one 1 defensive publication, he has published over 105 papers in scientific journals, at national and international conferences. He earned his Ph. D. (1999), from the University of Arizona, Tucson.

Topic Co-Organizer: Tannaz Harirchian, Intel, Tannaz Harirchian is an Intel R&D Packaging Engineer in Assembly & Test Technology Development division in Arizona where she has been engaged in pathfinding and development of a range of Intel CPU and SoC products. Tannaz received her PhD in Mechanical Engineering from Purdue University and joined Intel Corporation in 2011. Her focus has been on thermal characterization and thermal-mechanical enabling in Handheld and Mobile applications. Tannaz has co-authored a book and more than 25 peer-reviewed publications in electronics cooling.

Abstract: In the last 5 years there has been a significant growth in computing platforms ranging from handhelds to servers and everything in between, associated with increasingly high thermal management and other packaging challenges ranging from low to high form factors (mobile internet devices, smartphones, tablets, laptop computers, thin rack servers & blade servers and data centers). Majority of research today is CPU-centric whereas in the mobile/portable space, the device skin as well as the other components, which do not have dedicated thermal solutions, are equally challenging to cool. In products like handheld devices, mobile phones and blade/rack servers, passive dissipation is the most preferred and sometimes, the only possible cooling solution available. A panel of experts will discuss these aspects and will share their vision on the future of electronics thermal management and other advanced packaging solutions.

PANELISTS

Ken Goodson (Stanford), Professor and Chair of ME Dept., Stanford Univ. Stanford University

Ken Goodson is the Bosch Chairman of the Mechanical Engineering Department and the Davies Family Provostial Professor at Stanford University. His lab has graduated 40 PhDs, nearly half of whom are professors at schools including MIT, UC Berkeley, and Stanford. Goodson studied at MIT (PhD 93) and is a Fellow with ASME, IEEE, APS, and AAAS. Recognition includes the ASME Kraus Medal, the Heat Transfer Memorial Award, the THERMI Award, plenary lectures at INTERPACK, ITHERM, PHONONS, SEMITHERM, and THERMINIC, and best/outstanding paper awards at SEMITHERM, ITHERM, and the IEDM

Mark Hartman (Outlast), Director, Outlast Technologies

Mark Hartmann has over 29 years of experience in the global development and manufacturing of polymeric materials including coatings, biodegradable polymers, and energy management materials. His experience includes polymer synthesis, compounding, plastics conversion and technical management. His current responsibilities include global strategic technology management, technology due diligence for plastics thermal management materials. Mr. Hartmann received his undergraduate degree from North Dakota State University and his graduate degree from the University of Minnesota.

John Fitch (Google), Thermal Scientist, Google Inc

John Fitch currently designs and tests wearable products such as Google Glass. In addition to thermal packaging problems for Google, PARC, and Digital Equipment Corporation, John has worked on printing technologies, renewable energy, and fluid flow control systems. He received his MS from UC Berkeley and BS from Northeastern University.

Joshua Een, Thermal Engineering Manager, Intel Inc

Joshua has over 13+ years of smartphone and tablet mechanical, thermal and SoC package thermal design experience for companies including OQO, HP, nVidia and intel. Holds various patents in the areas of thermal and mechanical design. Extensive experience in the area of SW thermal management and algorithm development.

Escada Chiang, Director, Technology Research Division, Asia Vital Components Co

Escada has graduated with a Ph.D. from Taiwan University. She has been working in electronic cooling industry for almost 20 years. Since 2010, she leads the R & D team developing thin VC, loop thermosiphon and LHP.

John Thome, Professor, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland

He directs some 20 post-docs and PhD students, see http://ltcm.epfl.ch/, and is the founder of Virtual International Research Institute on Two-Phase Flow and Heat Transfer with 14 partner institutions, see http://2phaseflow.org/. He is the author of five books and is editor of the new 8-volume series Encyclopedia of Two-Phase Heat Transfer and Flow, coming out in April 2015. He received the ASME Journal of Heat Transfer Best Paper Award in 1998, the UK Institute of Refrigeration's J.E. Hall Gold Medal in 2008 for his work on microscale refrigeration heat transfer, the 2010 ASME Heat Transfer Memorial Award for his career work on flow pattern based heat transfer models for macro and micro-scale flows, the 2013 InterPack Conference Best Paper Award, the 2014 ASME Journal of Electronic Packaging Best Paper Award, and other recent awards.

9-1-3 Future Outlook of M/NEMS Technologies in Wearables and the Internet of Things (IoT)

Pavilion Room **July 7, 9:30-11:00 AM**

Panel Moderator: Professor Albert P. Pisano , (UC San Diego)

Albert P. Pisano began his service as Dean of the Jacobs School of Engineering on September 1, 2013. Pisano holds the Walter J. Zable Chair in Engineering and serves on the faculty of the departments of mechanical and aerospace engineering and electrical and computer engineering. Pisano is an elected member of the National Academy of Engineering for contributions to the design, fabrication, commercialization, and educational aspects of MEMS. Pisano earned his undergraduate ('76) and graduate degrees ('77, '80, '81) in mechanical engineering at Columbia University. Prior to joining the faculty at UC Berkeley, he held research positions with Xerox Palo Alto Research Center, Singer Sewing Machines Corporate R&D Center and General Motors Research Labs. Pisano's research interests include: micro-electro-mechanical systems (MEMS) wireless sensors for harsh environments (600°C) such as gas turbines and geothermal wells; and additive, MEMS manufacturing techniques such as low-temperature, low-pressure nano-printing of nanoparticle inks and polymer solutions. Other research interests and activities include MEMS for a wide variety of applications, including RF components, power generation, drug delivery, strain sensors, biosensors, micro inertial instruments, disk-drive actuators and nanowire sensors. He is a co-inventor listed on more than 20 patents in MEMS and has co-authored more than 300 archival publications.

Abstract: Are wearables and the Internet of Things (IoT) really the "killer" M/NEMS applications that they are assumed to be? This industry panel will discuss the future outlook of M/NEMS technologies in wearables and the IoT applications. Challenges in manufacturing, integration, and commercialization will be reviewed. Participation from M/NEMS luminaries (and the audience) will allow the community to make a critical assessment of this relatively new and buzz-creating field. The M/NEMS, packaging and electronics communities will not want to miss this historic and spectacular event. Join us!

PANELISTS

Kurt Petersen received his BS degree cum laude in EE from UC Berkeley in 1970. In 1975, he received a PhD in EE from the Massachusetts Institute of Technology. Dr. Petersen established a micromachining research group at IBM from 1975 to 1982, during which he wrote the review paper "Silicon as a Mechanical Material," published in the IEEE Proceedings (May 1982). This paper is still the most frequently referenced work in the field of micromachining and micro-electro-mechanical systems (MEMS). Since 1982, Dr. Petersen has co-founded six successful companies in MEMS technology, Transensory Devices Inc. in 1982, NovaSensor in 1985 (now owned by Amphenol), Cepheid in 1996 (now a public company on NASDAQ: CPHD), SiTime in 2004 (acquired by MegaChips), Profusa in 2008 (still private), and Verreon in 2009 (acquired by Qualcomm). In 2011, Dr. Petersen joined the Band of Angels in Silicon Valley. The Band is an angel investment group which mentors and invests in early stage, high-tech, start-up companies. Today, he spends most of his time helping and mentoring such companies. Dr. Petersen has published over 100 papers, and has been granted over 35 patents in the field of MEMS. In 2001 he was awarded the IEEE Simon Ramo Medal for his contributions to MEMS. Dr. Petersen is a member of the National Academy of Engineering and is a Life Fellow of the IEEE in recognition of his contributions to "the commercialization of MEMS technology".

Aaron Partridge is Founder and Chief Scientist of SiTime Corp where he guides the technological direction. SiTime was founded in 2005 to develop MEMS-based timing references. From 2001 through 2004, Dr. Partridge was Project Manager at Robert Bosch Research and Technology Center, where he coordinated the MEMS resonator and packaging research. From 1987 through 1991 he was a founder and Chief Scientist of Atomis, Inc., a manufacturer of STM, AFM, and BEEM (Scanning Tunneling, Atomic Force, and Ballistic Emission Electron) Microscopes. He received the B.S., M.S., and Ph.D. degrees in Electrical Engineering from Stanford University in 1996, 1999 and 2003. His thesis delivered MEMS accelerometers for the NASA X-33 space plane and the first thin-film encapsulated piezoresistive accelerometers. Dr. Partridge has authored and co-authored 30 scientific papers and holds 60 patents. He serves on the IEEE International Solid-State Circuits Conference, Imagers, MEMS, Medical and Displays Subcommittee, is the Editorial Chair of the IEEE International Frequency

Control Symposium, and is an Associate Editor for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

Nicole Kerness currently holds the position of Executive Director at Maxim Integrated where she focuses on advanced research and development in Optical Sensor Integration/Technology and Optical Wafer Level Packaging (WLP) for sensors. These sensors have been used in applications for ambient light, RGB, proximity, gesture, UV and heart rate sensing. Prior to Maxim, Dr. Kerness held positions as Program Manager and then Vice President of Product Engineering at Silicon Microstructures Incorporated (SMI). As Program Manager, she managed the development of a wide range of sensors including pressure sensors, accelerometers, gyroscopes, and microphones. As VP of Product Engineering, she managed engineers to develop, improve, and sustain the product portfolio of die-level and packaged pressure sensors for automotive, medical, and industrial applications. She was responsible for sensor design, development, simulation, characterization, packaging, and test. Prior to SMI, she held the position of Staff Engineer at Lockheed Martin Federal Systems working on MEMS and system reliability in radiation environments. Dr. Kerness earned the BS degree in Engineering Physics from Rensselaer Polytechnic Institute, the MS degree in Nuclear Science and Engineering at Cornell University, and the PhD degree in CMOS integrated MEMS at ETH Zurich in the research group of Prof. Henry Baltes. She also completed postdoctoral research at Stanford University working on a novel oxygen sensor.

Ariel Cao, CEO/Co-Founder InjectSense Inc. During his career, Ariel Cao has accumulated over 28 years of industry experience covering marketing, management, Semiconductor and Sensor (MEMS/NEMS) technologies, biomedical ASIC design and EDA. He completed two MSEE (ESIEE (Paris), and Santa Clara). He has worked as an IC designer and Software developer with several IC design groups at Interdesign (specialized in low power and IC for medical applications), EXAR, Silicon Compilers, Sun Microsystems (UltraSparc I) and Mentor Graphics (A/M-S and RF). In 2000, he joined MEMSCAP as Executive Vice President of Marketing and GM of US operations. In 2001, the company completed successfully an IPO of $100M at the Euronext (Paris). He was a co-investor during the seed round in 1997. Continuing his entrepreneurship focus on developing US subsidiaries for European companies, Ariel created and managed another US entity for PHS MEMS until early 2004 as General Manager and Director of Business Development. In 2005, he founded Cabrillo Technology Int'l Inc which evolved into M2C Partners LLC in 2011, focused in Health and related emerging technologies such as sensor (MEMS), ultra-low power IC and integration solutions. Finally in 2014, he has co-founded InjectSense Inc, a medical device company focused on ultra-miniature implantable medical devices. The InjectSense wireless sensing system is a transformational platform for therapy management that provides accelerated, real-time monitoring of a patient's dynamic disease state and immediate feedback on drug effectiveness in managing physiological pressure of a specific organ.

9-1-4 Impact of Microfluidics and Lab-on-a-Chip on Bio: Challenges and Opportunities

Pavilion Room **July 8, 2:45-4:15 PM**

Topic Organizer: Carolyn Ren, Department of Mechanical & Mechatronics Engineering, University of Waterloo

Carolyn Ren received her Ph.D. in Mechanical Engineering from the University of Toronto in 2004 and Master's and Bachelor's degrees in Thermal Engineering from Harbin Institute of Technology in 1995 and 1992, separately. She worked in Dalian University of Technology from 1995 to 1999 prior to her Ph.D. study in Canada. She joined the University of Waterloo (UW) in May 2004 as an Assistant Professor and promoted to Associate Professor and Professor in 2010 and 2015, respectively. She has received many research awards in recognition of her research excellence since she started at UW, which include fellow of Canadian Society of Mechanical Engineering in 2012, Research Excellence Award from UW in 2010, Canada Research Chair in Lab-on-a-Chip Technology in 2009 and in 2014, and Early Research Award from the Ministry of Research and Innovation of Ontario in 2007

Abstract: The field of Microfluidics and Lab-on-a-Chip has been extensively developed over the past two decades with contributions from a wide range of science and engineering disciplines. Because of its interdisciplinary nature, flourish collaborations cross disciplines have been stimulated as the field was expanding which led to many innovations and the growing numbers of start-up companies spanning from micromanufacturing, chemical assays, medical diagnosis, drug screening to name a few. Despite the tremendous success received by this field, the original promise of revolutionizing the existing levels of chemical and biological assays has not been observed. Researchers have been exploring new directions while keeping developing new functionalities that can improve the performance of Microfluidics and Lab-on-a-Chip devices. Two-phase droplet microfluidics is an example of new direction which offers magnitude higher throughput as compared to single-phase microfluidics by using well-encapsulated nanoliter-sized drops. This topic will focus on the impact of Microfluidics and Lab-on-a-Chip on the Bio area, which has been one of the major players that drive the field of microfluidics and Lab-on-a-Chip. With the input from our panelist, we will focus our discussions on the outlook of the field, challenges we face and opportunities for the future development.

PANELISTS

Paul Chiarot, State University of New York at Binghamton, Mechanical Engineering

Dr. Paul Chiarot is an assistant professor in the Department of Mechanical Engineering at the State University of New York at Binghamton where he directs the Microfluidics and Multiphase Flow Laboratory. He received a PhD in Mechanical Engineering from the University of Toronto and has worked as a post-doctoral researcher at the University of Rochester.

Michael Schertzer, Assistant Professor, Rochester Institute of Technology, Mechanical Engineering

Dr. Michael Schertzer received the Bachelor of Engineering and Management from the Department of Mechanical Engineering at McMaster University in Hamilton, Ontario, Canada, and a Master of Applied Science from McMaster University for his work examining the heat transfer performance of capillary pumped loops in terrestrial and extra-terrestrial applications. He earned his Doctorate in the Department of Mechanical and Industrial Engineering from the University of Toronto for his work characterizing the motion and mixing of droplets in Digital Microfluidic Devices. He continued this work as a Postdoctoral Fellow at the University of Toronto focusing on the design/commercialization of a point of care Digital Microfluidic device.

Josh Molho, CTO and Co-founder at Zephyrus Biosciences, Inc.

Dr. Josh Molho received a Ph.D. in Mechanical Engineering from Stanford University where he studied electrokinetic dispersion in microfluidic devices. He has more than a decade of experience commercializing microfluidics technology at both large and small companies including: Caliper Life Sciences, Pelikan Technologies, Applied Biosystems, and PerkinElmer. Josh is currently Chief Technology Officer at Zephyrus Biosciences, a spinout from UC Berkeley that he co-founded in 2013. Zephyrus is commercializing novel microfluidics technology for single-cell resolution protein measurements with applications in cancer, stem-cell and immunology research.

Scott Tsai, Assistant Professor, Ryerson University, Mechanical and Industrial Engineering

Dr. Scott Tsai got his mechanical engineering B.A.Sc. degree from the University of Toronto in 2007. His engineering sciences S.M. and Ph.D. degrees were both awarded from Harvard University, in 2009 and 2012, respectively. Dr. Tsai was also an NSERC postdoctoral fellow at the University of Toronto prior to joining Ryerson University in December 2012. In 2015, the Canadian Society for Mechanical Engineering presented Dr. Tsai with the I. W. Smith Award, for outstanding early career achievement in creative engineering.

9-1-5 The Role of Additive Manufacturing on Next Generation Thermal Management Systems

Pavilion Room **July 7, 1:00-2:30 PM**

Topic Organizer: Professor Michael M. Ohadi, Ph.D., University of Maryland

Prof. Ohadi is a professor in the Department of Mechanical Engineering at the University of Maryland, involved in the Center for Environmental Energy Engineering. His research interests are in heat and mass transfer at the meso, micro and nano-scales with applications to thermal/fluid system miniaturization, smart heat exchangers, and innovative energy systems

Abstract: This panel will examine means by which the field of enhanced heat/mass transfer may benefit from the enormous potential that some advanced manufacturing techniques, such as additive manufacturing, can offer in development of next generation heat/mass transfer surfaces, fluid management devices, and thermal management systems as a whole. Latest progress in 3D printing of metals, polymers, and composites will be reviewed and their application to thermal management will be discussed. The panel members represent top expertise from academia, end user industries, and additive manufacturing supplier companies.

PANELISTS

Professor Avi Bar Cohen, Mechanical Engineering, University of Maryland

Theme: Additive Manufacturing of Embedded Cooling Components

Dr. Avram Bar-Cohen is an internationally recognized leader in thermal science and technology, an honorary member of ASME, and Fellow of IEEE, as well as Distinguished University Professor in the Department of Mechanical Engineering at the University of Maryland. His publications, lectures, short courses, and research outcomes, as well as professional service in ASME and IEEE, have helped to create the scientific foundation for the thermal management of electronic components and systems and pioneered techniques for energy-efficient sustainable design of manufactured products. His current research focuses on on-chip thermoelectric and two-phase microchannel coolers for high heat flux electronic

components, thermal control of solid-state lighting systems, and polymer-fiber composite heat exchangers for seawater applications. He is the Editor-in-Chief of World Scientific Press' forthcoming Encyclopedia of Thermal Packaging. From 2001 to 2010 he served as the Chair of Mechanical Engineering at Maryland and is currently on assignment as a Program Manager in the MTO at the Defense Advanced Projects Agency in Virginia.

Jack L. Beuth, Professor, Mechanical Engineering, Carnegie Mellon University

Theme: Expertise within Additive Manufacturing: Process Modeling and Experimentation

Dr. Jack L. Beuth is Professor of Mechanical Engineering at Carnegie Mellon University. Jack Beuth received his Ph.D. in Engineering Sciences from Harvard in 1992. Dr. Beuth's research is in the disciplines of solid mechanics, heat transfer and manufacturing, with over 80 publications across the areas of additive manufacturing, interfacial mechanics, thin film mechanics and fracture mechanics. Dr. Beuth's modeling research in additive manufacturing has led to the development of "process map" approaches for mapping out the role of principal process variables on process characteristics such as melt pool geometry, microstructure and residual stress. By characterizing direct metal AM processes over their full process variable ranges, Dr. Beuth's research is allowing unique insights into process control, expansion of process operating ranges, identification of tests needed to characterize a process, and unique comparisons of AM processes operating in very different regions of processing space.

Arun Muley, Lead Thermal Management Engineer, Boeing

Theme: Progress in additive manufacturing of metals and metal composites

Dr. Arun Muley is a Thermal Management Lead at Boeing Research and Technology in Huntington Beach, CA. He is leading several advanced thermal and heat exchanger programs, which include CRAD and university research. Earlier, he led development of Energy Storage and Thermal Management subsystems for a DRAPA funded high-altitude, long duration UAV (Vulture II) program. His primary research interest is in use of novel heat transfer enhancement techniques in development of advanced heat exchangers and thermal systems. He is lead inventor of a US patent on microchannel heat exchanger and co-inventor for several other invention disclosure and patent applications. He is a Fellow of the American Society of Mechanical Engineers (ASME), a member of the Executive Committee of the Heat Transfer Division and an Associate Editor of journal of Thermal Science and Engineering Applications.

Jonathan Cornelus, Business Development Manager, 3D systems

Theme: Additive Manufacturing: Industrial applications of Direct Metal Printing

As the business development manager for Quickparts, the parts on demand division of 3D Systems for industrial applications, Jonathan specializes in developing technical manufacturing strategies for customers in various high tech industries. Jonathan has been an early adopter of 3Dprinting technologies since 2004, aligning his passion for bridging gaps between business and technology. Prior to joining 3D Systems, Jonathan worked for more than 8 years at Materialise, leading additive manufacturing market development efforts in France gravitating around the automotive design & engineering projects as well as industrial applications. As a Belgian and French national, Jonathan holds a Master Degree in chemical engineering from the University of Leuven - Belgium and an MBA degree from ISG business school in Paris - France.

9-1-6 Embedded Cooling – IceCool APPs

Pavilion Room **July 8, 4:45-6:15 PM**

Topic Organizer: Professor Avi Bar Cohen, DARPA, Arlington , VA, USA

Avram Bar-Cohen is a Program Manager in the MTO of the DARPA, Arlington, VA, with interests in thermal management and energy conversion technologies. He is serving in this capacity while on leave from his position as a Distinguished University Professor at the University of Maryland, where he most recently also served as the Chair of the Mechanical Engineering Department (2001-2010). Bar-Cohen earned a PhD in Mechanical Engineering from the Massachusetts Institute of Technology and prior to joining Maryland. Dr. Bar-Cohen has received numerous awards, including the prestigious IEEE CPMT Field Award (2014), International Centre for Heat and Mass Transfer's 2008 Luikov Medal, ASME's Heat Transfer Memorial Award (1999), and the IEEE CPMT Society's Outstanding Sustained Technical Contributions Award (2002).

Topic Co-Organizer: Kaiser Matin, Technical SETA, DARPA / MTO

Kaiser Matin is a Senior Principal Engineer at Systems Planning Corporation in Arlington, VA. Kaiser provides strategy and technology support as a DARPA/MTO Technical SETA contractor. He is an expert in thermal design and heat transfer technologies and performs 3D thermal FEA/CFD analysis to support, evaluate, and verify various phases of technology readiness and maturation. He served as a session co-chair for ITHERM and has authored or co-authored several peer reviewed technical publications. Kaiser is a member of IEEE and ASME. He holds three US patents. Previously, Kaiser was a Staff Engineer at United Technologies and was responsible for the thermal design of airborne electronic boxes, motors and generators. Kaiser received his MS and PhD degrees from Texas Tech.

Abstract: Embedded cooling represents a third generation ("Gen-3") thermal management technology for electronic circuits, providing kW-level chip cooling capability by extracting the heat directly from the chip and/or substrate. Detailed consideration of power distribution in the chip and package, and how power delivery needs and constraints are integrated into the design, fabrication, and optimization of advanced electronic and photonic components, can inform and guide the articulation of the Gen-3 embedded cooling paradigm. Such intra/inter chip embedded cooling approaches are being designed to be compatible with the materials, fabrication procedures, and thermal management needs of next generation electronics. The Panel offers a range of embedded cooling techniques, starting with: Raytheon utilizing its GaN on Diamond substrates with integrated microchannels in diamond and bonds them with multilayer silicon fluid manifold structure for intrachip cooling of its MMICs. NGAS utilize near junction diamond lined microchannels in etched GaN on SiC. Each HEMT device is then cooled with high flow jet impingement. BAE uses CTE matched metal microchannel cooler with to low temperature bonded GaN on Diamond for cooling MMICs. Lockheed Martin uses single phase submerged jet impingement cooling approach for cooling their GaN on SiC MMICs. Nuvotronics fabricates three-dimensional high conductivity microfluidic channels using a layer-by-layer high precision photolithography process surrounding the GaN PAs for hot spot cooling and spreading.

PANELISTS

Benjamin Poust, Northrop Grumman Aerospace Systems, Redondo Beach, CA

Ben Poust received his PhD in Materials Science and Engineering from University of California, Los Angeles. He has been working in the field of compound semiconductor based RF and mixed signal microelectronics for over 14 years, starting at what was then TRW and is now Northrop Grumman Aerospace Systems in Redondo Beach, California. Ben has worked on a variety of DARPA programs, including WBGSTI, SMART, THz Electronics, WBGS-RF, NEXT, MPD, COSMOS, DAHI and ICECool Applications. His expertise is concentrated on modeling and metrology spanning a variety of physics and engineering disciplines, including x-ray scatter, fluid dynamics, structural mechanics, electromagnetics, and heat conduction.

Dave Altman, Raytheon

David H Altman is a Senior Principal Mechanical Engineer at Raytheon Integrated Defense Systems. David has 13 years of experience designing, developing, analyzing and testing thermal management systems for radar and other high power defense electronics systems. Over this period, David has developed liquid cooling systems, cold plates, heat spreaders and integrated thermal management systems that are employed in fielded Raytheon products. As a member of Advanced Technology Programs, his current work focuses on development of new thermal management and energy system technologies. David holds BS and MS degrees from Rensselaer Polytechnic Institute and Boston University. He has authored or co-authored 18 peer reviewed technical publications and holds five US patents related to electronics cooling.

Carl Cramer, BAE

Carl Creamer is a Technology Development Manager at BAE Systems in Nashua, NH, focused on exploiting the company's GaN and GaAs compound semiconductor capabilities for insertion into both current and future military electronic systems. Carl has over thirty years combined professional experience in technical leadership of CRAD developments, program management of large space programs, and hands-on design of electronic systems for military, space and commercial applications. In his current role, Carl is leading a DARPA-sponsored ICECool development for advanced thermal management solutions to improve performance of GaN power electronics with extreme heat loads that includes the development of GaN on diamond MMICs and microchannel cooling technologies.

Ken Vanhille, Nuvotronics

Presentation Title: Microfabricated Fluidic Heat Spreaders for High Thermal Density Microelectronics

The performance of many electronic systems, whether they be as ubiquitous as large server farms or as specialized as gallium nitride power amplifiers for military applications can be significantly limited without sufficient thermal management. Cold plates and similar solutions can be employed on a macro scale. Alternatively, the exploration of process modifications to greatly improve thermal characteristics of semiconductor microelectronics is currently underway. This presentation will detail an approach that intimately interfaces to a standard bare microelectronics die. By exploiting the design freedom of three-dimensional microfluidic channels fabricated using a layer-by-layer process, significant performance improvements can be realized while not requiring re-design of the microchip.

John Ditry, Lockheed Martin

John Ditri received his BS, MS and Ph.D. degrees in applied solid mechanics from Drexel University in Philadelphia, PA. After graduation, he accepted a postdoctoral position at Penn State University in State College PA where he taught undergraduate dynamics and continued his research on ultrasonic guided wave propagation. Dr. Ditri joined Lockheed Martin in 2004, after spending 10 years in industry working on the design of experimental stress measurement and automated semiconductor assembly equipment. Since joining

Lockheed Martin, Dr. Ditri has been involved in the analysis, design and testing of various systems including high performance Tx/Rx RF modules, RADAR and EW arrays, and others. Dr. Ditri has 55 publications and holds 12 US patents.

9-1-7 Is Die-package Co-design the Key for Cost-effective Multi-die ICs?

Pavilion Room **July 9, 9:30-11:00 PM**

Topic Organizer: Herb Reiter, Eda 2 Asic Consulting Inc

Herb Reiter is President and Founder of eda 2 asic Consulting, Inc. As business development consultant he focused on introducing innovate technologies to the Semiconductor Industry. Initially he focused on promoting EDA tools for ASIC design, then silicon IP, process- and packaging technologies. Since 2008 he is promoting – in his roles at the GSA, at SEMATECH, at Si2 and as frequent blogger – the benefits of multi-die designs and 3D-IC technology. Herb attended 40+ Continuing Education courses at Stanford University, earned an MBA at San Jose State University and Master Degrees in Business and Electrical Engineering at the University and the Technical College in Linz/Austria, respectively.
Abstract: Packing multiple dice on an Interposers or vertically stacked into a single IC package enables higher performance per Watt, reduces external package pins and enables a much smaller form-factor than traditional packaging solutions. However, the power density (Watts per cm3) increases the cooling challenge, and demands user friendly and accurate die - package co-design tools and methodologies to enable designers to walk the fine line between too costly over-designs and out of spec or unreliable under-designs. The panelists, from different parts of the supply chain, will share their experience with complex, multi-die IC designs and how to mitigate the thermal challenges they present.

PANELISTS

John Ferguson, Director, Mentor Graphics

John Ferguson is Director of Marketing for the Calibre DRC product line at Mentor Graphics in Wilsonville, Oregon. He received a BS degree in Physics from McGill University in 1991, an MS in Applied Physics from the University of Massachusetts in 1993, and a PhD in Electrical Engineering from the Oregon Graduate Institute of Science and Technology in 2000. He has worked extensively in the area of physical design verification. Current activities include physical verification and PDK enablement for 3DIC design and Silicon Photonics.

Tom Gregorich (Micron)

Thomas Gregorich is currently Vice President of Package Technology at Micron. Previously Mr. Gregorich held Vice-President and Director-level positions at Broadcom, MediaTek and Qualcomm. While at Qualcomm he established the Package Engineering department and for 12 years led the development of Qualcomm's small form-factor package portfolio including NSP, CSP, BCC, QFN, POP and PIP. A large portion of the Qualcomm portfolio is 3D and utilizes both wire bond as well as flip chip interconnects. Prior to his position at Qualcomm, Mr. Gregorich worked for Motorola and had assignments in the Semiconductor Products Sector and Corporate Research, both in the United States as well as Japan and China. Mr. Gregorich has a BS in Mechanical Engineering from Bradley University, an MBA from Northern Illinois University and is a Senior Member of IEEE.

Bob Patti (Tezzaron),

Robert Patti is CTO and VP of Design Engineering at Tezzaron Semiconductor. He was the founder and president of the predecessor company, ASIC Designs, Inc., a member of Technical Staff for Tellabs, Inc. He is a Member of IEEE and the former Vice-Chairman of JEDEC's DDRIII / Future Memories Task Group. Robert holds 18 US patents, numerous foreign patents and many more pending patent applications in deep sub-micron semiconductor chip technologies. He earned a BS (EE/CS) and BS (Physics) from the Rose-Hulman Institute of Technology in Indiana.

Rich Rice (ASE)

Rich Rice currently serves as Senior Vice President of Business Development for ASE Group, with responsibilities within the North America region. Appointed in 2003, Rich previously held positions within ASE to oversee sales and applications engineering support. With over thirty years of experience within the semiconductor industry, Rich has held various engineering and business development positions at Amkor Technology and National Semiconductor Corporation. Rich currently serves in a Director role on the IMAPS Global Executive Council as well as advisory roles on MEPTEC board and SEMI's IC packaging committee. He holds a BS degree in Agricultural Engineering from the University of Illinois.

Jan Vardaman (TechSearch),

E. Jan Vardaman is president and founder of TechSearch International, Inc., which has provided market research and technology trend analysis in semiconductor packaging since 1987. She is the co-author of How to Make IC Packages (published in Japanese by

Nikkan Kogyo Shinbunsha), a columnist with Printed Circuit Design & Fab/Circuits Assembly, and the author of numerous publications on emerging trends in semiconductor packaging and assembly. She is a member of IEEE CPMT, SMTA, MEPTEC, IPC, IMAPS and SEMI. She was elected to two terms on the IEEE CPMT Board of Governors and is a CPMT Distinguished Lecturer. Before founding TechSearch International, she served on the corporate staff of Microelectronics and Computer Technology Corporation (MCC), the electronics industry's first pre-competitive research consortium. She has made numerous presentations on developments in advanced packaging.

2015 InterPACK / ICNMM: Women in Technology Panel

Pavilion Room **July 9, 4:45-6:15 PM**

The organizing committee of InterPACK and ICNMM is delighted to announce the "Women in Technology Panel." The panel is open to all registered attendees and will provide an opportunity for those who work in technology fields to discuss the opportunities and impact that women are making on the field. The panel will include women who are making an impact in research in both industry and academia discussing their path to success. Graduate students are particularly encouraged to attend. The speakers will include:

Dr. Tsu-Jae King Liu, Chair, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley. Dr. Tsu-Jae King Liu received the B.S., M.S., and Ph.D. degrees in Electrical Engineering from Stanford University. From 1992 to 1996 she was a Member of Research Staff at the Xerox Palo Alto Research Center (Palo Alto, CA). In 1996 she joined the faculty of the University of California, Berkeley, where she is currently the TSMC Distinguished Professor in Microelectronics, and Chair of the Department of Electrical Engineering and Computer Sciences. Dr. Liu's research awards include the DARPA Significant Technical Achievement Award (2000) for development of the FinFET, the IEEE Kiyo Tomiyasu Award (2010) for contributions to nanoscale MOS transistors, memory devices, and MEMs devices, the Intel Outstanding Researcher in Nanotechnology Award (2012), and the Semiconductor Industry Association Outstanding Research Award (2014). She has authored or co-authored close to 500 publications and holds over 90 U.S. patents, and is a Fellow of the IEEE. Her research activities are presently in advanced materials, process technology and devices for energy-efficient electronics.

Dr. Niru Kumari, Senior Research Scientist, Systems Research Lab, HP Labs. Dr. Kumari joined Hewlett-Packard Co. in 2010. She is a mechanical engineer and keenly passionate about sustainability and environment. This has led her to work on next generation IT computing systems with significantly high performance at low energy consumption. She is currently leading the thermal research on non-volatile memory and future system on chips for the Machine, a new computing architecture for big data applications. Previously, her research collaboration with HP Servers led to deployment of HP's warm water-cooled supercomputer, Apollo 8000, which was awarded the 2013 InfoWorld Green IT Award. She also was named 2012 EPPD Young Engineer and 2014 EPPD Women in Engineering Award by ASME for her contributions to the broader thermal community. Dr. Kumari worked at Brick Nanotechnology Center, Purdue University for her PhD on electrical actuation of droplets on smooth and hydrophobic surfaces. She received her MSME from Purdue University and BTech from IIT Kharagpur

Evelyn N. Wang, Associate Professor, Mechanical Engineering Department, MIT. Dr. Wang is the Associate Director of the Solid State Solar Thermal Energy Conversion (S3TEC) Center, a DOE Energy Frontiers Research Center. She received her BS from MIT in 2000 and MS and PhD from Stanford University in 2001, and 2006, respectively. From 2006-2007, she was a postdoctoral researcher at Bell Laboratories, Alcatel-Lucent. Her research interests include fundamental studies of micro/nanoscale heat and mass transport and the development of efficient thermal management, water desalination, and solar thermal energy systems. Her work has been honored with awards including the 2012 ASME Bergles-Rohsenow Young Investigator Award in Heat Transfer, as well as several best paper awards at various conferences.

11-1 NSF - Graduate Student Career Path Workshop

Pavillion Room **6:15 pm- 7:45pm**

Topic Organizer: Amy Fleischer, Villanova University Topic

Co-Organizer: Alfonso Ortega, Villanova University

The organizing committee of InterPACK and ICNMM is delighted to announce that there will be a "Graduate Student Career Path Workshop" held at the 2015 joint InterPACK/ICNMM conference at the Fairmont San Francisco Hotel in San Francisco, California.

The workshop is open to all registered graduate students and will provide an opportunity for students to explore potential career paths in both academia and industry. Students will have the opportunity to interact with both industry researchers and faculty from different types of universities as well as network with fellow students.

The workshop will kick off with a panel on career paths featuring distinguished engineers who have chosen different types of careers. The panel will be followed by small group discussions in which students will directly interact with both industry and faculty mentors.

All students are welcome and graduate students awarded travel grants are particularly urged to participate.

Participating in the "Graduate Student Career path Workshop" is a great opportunity for you to learn more about what your future may hold.

We look forward to your participation!

10-1-1 Low Dimensional Materials Characterization & Applications

French Room **July 7, 4:45-6:45 PM**

Session Organizer and Moderator: Prof. Satish Kumar, Georgia Institute Of Technology

Abstract: Tech talk on the low dimensional material focuses on transport phenomenon, characterization techniques and fundamental challenges to achieve high performance in a wide range of low dimensional materials and their devices. In this session, three leading researchers in the area of low dimensional materials will share their research and present their views on different aspects of low dimensional materials. The speakers are Prof. Li Shi from UT Austin, USA, Prof. Muhammad A. Alam from Purdue University, USA and Prof. Heiner Linke from Lund University, Sweden. Prof. Li Shi talk is related with in-plane and cross-plane phonon transport in 2D materials and evaluation of the thermal management potentials of 2D materials. The talk will provide an update on on-going developments in 2D materials and other architectures of 2D building blocks, including nanotubes, continuous foam structures, and hybrid and composite structures, as thermal management materials. Prof. Muhammad A. Alam will address the concepts of percolation doping, the fundamental challenges of the 2D films in achieving world-record performance in multiple fields such as transparency-conductivity product, on-off ratio, signal to noise ratio of a sensor, chemical and mechanical stability. The talk will explain how intrinsic material limitations can be overcome by deeper understanding of geometry and physics of carrier transport in different device structures. Prof. Heiner Linke talk will focus on novel thermoelectric transport phenomena in low-dimensional systems. This will include the observation of a transverse thermovoltage in ballistic and asymmetric structures, experimental studies of the magnetic-field symmetry of combined thermal and electric transport in multi-terminal devices, and the observation of a power-factor enhancement in nanowires due to density-of-states effects.

Prof. Muhammad Alam, Purdue University: Professor Alam teaches Electrical Engineering at Purdue University, where his research focuses on the physics and technology of semiconductor devices. From 1995 to 2003, he was with Bell Laboratories, Murray Hill, NJ, as a Member of Technical Staff in the Silicon ULSI Research Department. Since joining Purdue in 2004, Dr. Alam has published over 200 papers and has presented many invited and contributed talks at international conferences. He is a fellow of IEEE, APS, and AAAS, and recipient of 2006 IEEE Kiyo Tomiyasu Award for contributions to device technology for communication systems. Prof. Alam enjoys teaching: more than 100 thousands students worldwide have learned some aspect of semiconductor devices from his web-enabled courses.

InterPACKICNMM2015-48135: Percolation Doping & Copercolating Transport in Graphene and CNT Networks

2D semiconductors such as graphene, CNT or Si/Ag/ZnO NW networks have potential applications in transistors, sensors, and solar cells. To their great dismay, however, researchers in specific technology area often discover that the films can hardly match the performance of competing classical materials, let alone achieve the projected theoretical limits. A closer analysis identifies the challenges. For transparent conductors, the tube-tube transfer resistance CNT/Si/Ag/ZnO NWs defines the sheet resistivity of the samples; Similarly, CVD graphene and other 2D material are intrinsically polycrystalline -- the maze formed by high-resistance grain-boundaries throttles carrier transport. For transistors and sensors, CNT contains a mixture of metallic and semiconducting CNTs that compromises the on/off ratio and the percolation bottlenecks often seed electro-thermal cross-talk and electrostatic fracture. In this talk, we will explain how one can use fundamentally new concepts of positive and negative percolation doping to address the intrinsic challenges of classical 2D films and achieve world-record performance metrics for these materials (i.e., transparency-conductivity product, on-off ratio of a transistor, signal to noise ratio of a sensor, chemical and mechanical stability of devices). In each case, the experimental results will be explained by intuitively simple ideas from percolation theory, fractal geometry, and statistical circuit theory. This percolation engineering of graphene and CNT network demonstrates how intrinsic material limitations can be overcome by deeper understanding of physics of carrier transport in these non-ohmic device structures.

Professor Li Shi, University of Texas at Austin Li Shi is the BF Goodrich Endowed Professor in Materials Engineering at University of Texas at Austin. He spent close to a decade in combustion research, which resulted in a bachelor degree in Thermal Engineering from Tsinghua University at Beijing in 1991, a master degree in Mechanical Engineering from Arizona State University in 1997, and four-year industrial research experience in between. His invention of micro-devices for studying thermal physics in individual carbon nanotubes earned him a doctoral degree in Mechanical Engineering from University of California at Berkeley in 2001. Dr. Shi investigated thermoelectric cooling as an IBM Research Staff Member for a year before moving to UT Austin in 2002 to build a program at the interface between thermal sciences and materials sciences. He currently serves as the Editor-in-Chief of Nanoscale and Microscale Thermophysical Engineering. Dr. Shi's research achievements and professional services have been recognized by the CAREER Award from the National Science Foundation, the Young Investigator Award from the Office of Naval Research, the ASME Transaction Journal of Heat Transfer Outstanding Reviewer Award, and the O'Donnell Award in Engineering from the Academy of Medicine, Engineering, and Science of Texas. He is an elected fellow of ASME and APS.

InterPACKICNMM2015-48810: Thermal Transport Properties and Thermal Management Prospect of Two-dimensional Layered Materials:

Two-dimensional layered materials have received rapidly increasing interest for a variety of applications including thermal management. Among them, graphene and hexagonal boron (h-BN) nitride are being widely investigated because of high basal plane thermal conductivity. While the theoretic basal plane thermal conductivity values for clean free standing single layer can indeed be record high because of suppression of interlayer phonon scattering, such ultrahigh values are not achievable when the 2D layers are used in thermal management, where the 2D heat spreaders have to be in contact with a heat source and a heat sink, or embedded in a medium. The underlying mechanism is rather simple: the interaction with a dissimilar material can suppress in-plane phonon transport in a 2D sheet even more than the inter-layer interaction between adjacent similar 2D layers in a three-dimensional stack such as graphite or bulk h-BN. Understanding the effects of interface interaction on in-plane and cross-plane phonon transport in 2D materials is thus necessary for properly evaluating the thermal management potentials of 2D materials. Besides examining this basic research question, this talk will also provide an update on on-going developments of other architectures of 2D building blocks, including nanotubes, continuous foam structures, and hybrid and composite structures, as thermal management materials.

Prof. Heiner Linke, Lund University, Sweden

Heiner Linke is a Professor of Nanophysics at Lund University in Sweden. He has a master's degree (Dipl. Phys) in Technical Physics from the Technical University in Munich (1992), and a doctorate degree in engineering physics from Lund University in Sweden (1997). Between 1998 - 2001 he was a research fellow at the University of New South Wales in Sydney/Australia, before joining the physics department at the University of Oregon in 2001 where he received indefinite tenure in 2005 and remained until 2009. Between 2010 – 2013, he served as the Head of the Division of Solid State Physics at Lund University. Since 2013, he is the Director of the Nanometer Structure Consortium at Lund University (nmC@LU), a research environment engaging about 250 scientists in three faculties. A recipient of an U.S. NSF CAREER Award, his research in experimental physics is concerned with non-equilibrium transport mechanisms, spanning projects in nanoelectronics, fluid mechanics and biological physics. In particular, he is interested in how thermal non-equilibrium can be harvested to produce useful work, for example in thermoelectrics and in molecular motors. He has published more than 140 articles in refereed, international journals (h-index 26), and has given more than 100 invited talks at international conferences, workshops and institutions. He chaired interdisciplinary Nobel Symposia in 2005 and 2012, is a co-editor of European Journal of Physics B, and is a member of several American and European professional societies, including the Royal Swedish Academy of Sciences.

InterPACKICNMM2015-48866: Thermoelectric power factor in low-dimensional systems

Recently, the thermoelectric properties of low-dimensional systems attract much interest, because of the opportunities offered by low-dimensional systems to achieve thermoelectric power conversion at high conversion efficiency. Here, I will report on two key experiments. First, I will report on the observation of a power-factor enhancement in nanowires due to density-of-states effects: efficient thermoelectric energy conversion requires materials with low thermal conductivity k and with a high power factor. Semiconductor nanowires have attracted great interest for thermoelectrics, because phonon surface scattering substantially reduces their k, and because one-dimensional (1D) electron confinement effects are predicted to significantly enhance the power factor. However, this 1D power-factor enhancement effect has so far not been realized, to the very best of our knowledge, in part because very thin nanowires (typically less than 20 nm), careful control of the carrier concentration, and either high electron mobility or very short wires are required. Here, we show that these strict conditions do not pose a limit to the performance of nanowire-based thermoelectrics. We report the observation of a power factor in InAs nanowires that exceeds that predicted by a single-band bulk model by up to an order of magnitude at temperatures below about 20 K. We attribute this enhancement effect not to the long-predicted 1D subband effects, but to quantum-dot like states that form in electrostatically non-uniform nanowires as a result of interference between propagating states and 0D energy resonances. As this novel mechanism for power-factor enhancement is observed in field-effect-gated nanowires that are relatively thick (50 - 70 nm) and long (μm-scale), and is tolerant to variations in intrinsic carrier concentration, it greatly increases the range of nanowire systems that may be used in thermoelectric applications [1]. Second, I will report on recent measurements of the thermoelectric power output of single quantum dots [2], which serve as ideal energy filters and thus as ideal model systems for thermoelectric power conversion. We are able to measure the temperature differential across a single quantum dot and can infer, from power measurements, a thermoelectric efficiency very near to ideal values [3]. References [1] Wu, P. M., Gooth, J., Zianni, X., Svensson, S. F., Gluschke, J. G., Dick, K. A., et al. (2013). Large Thermoelectric Power Factor Enhancement Observed in InAs Nanowires. Nano Letters, 13(9), 4080–4086. doi:10.1021/nl401501j [2] Svensson, S. F., Hoffmann, E. A., Nakpathomkun, N., Wu, P. M., Xu, H. Q., Nilsson, H. A., et al. (2013). Nonlinear thermovoltage and thermocurrent in quantum dots. New Journal of Physics, 15(10), 105011. doi:10.1088/1367-2630/15/10/105011. [3] A. Svilans, A. Burke, M. Leijnse, H. Linke et al., to be published (2015)

10-1-2 Power Electronics and Electric Machines

French Room **July 8, 7:45-9:15 AM**

Session Organizer and Moderator: Dr. Sreekant Narumanchi, National Renewable Energy Laboratory, Professor Juan Rivas, Stanford University

Abstract: The development of power electronics and electric machines will play a critical role in the efficiency of future hybrid and electric vehicles. It is anticipated that future automotive electronics will dissipate heat fluxes on the order of ~1000 W/cm2 due to smaller package size. In this light, considerable effort and significant investment is being targeted at the search for new, efficient heat transfer technologies. In addition, the design of power electronics and electric drive motors must include the development of wide bandgap materials and new magnetic materials in order to increase efficiency and performance. In this talk, the Power Electronics and Electric Machinery (PEEM) Group at Oak Ridge National Laboratory (ORNL) will discuss the use of wide bandgap electronics in applications of dc-dc converters, inverters, and chargers including advanced 3D-printed device packaging to meet and exceed the DOE Electric Drive Technologies targets and goals. On the electric motor side, the ORNL PEEM group focuses on reduced rare-earth permanent magnet or electric motors with no permanent magnets. Next, the Toyota Research Group of North America will discuss cooling challenges associated with future automotive electronics and how advanced cold plate design techniques are required to address them. Specifically, strategies to enhance two-phase cooling performance will be discussed including the use of optimized inlet manifolds for uniform fluid delivery, multi-scale surfaces that enable higher critical heat fluxes, and engineered vapor extraction manifolds for efficient fluid removal.

Burak Ozpineci, Oak Ridge National Laboratory (ORNL)

Burak Ozpineci received the B.S. degree in electrical engineering from Orta Dogu Technical University, Ankara, Turkey, in 1994, and the M.S. and Ph.D. degrees in electrical engineering from the University of Tennessee, Knoxville, TN, USA, in 1998 and 2002, respectively. He is currently leading the Power Electronics and Electric Machinery Group and managing the Electric Drive Technologies Program at ORNL. He also serves as a Joint Faculty Associate Professor with the University of Tennessee, Knoxville. His research interests include system-level impact of wide bandgap power devices, multilevel inverters, power electronics for electric and hybrid electric vehicles, advanced manufacturing of power electronics, and wireless charging. Dr. Ozpineci is the Vice Chair of the IAS Transportation Systems Committee, was the Chair of the IEEE PELS Rectifiers and Inverters Technical Committee, and was Transactions Review Chairman of the IEEE Industry Applications Society Industrial Power Converter Committee. He received the 2006 IEEE Industry Applications Society Outstanding Young Member Award, 2001 IEEE International Conference on Systems, Man, and Cybernetics Best Student Paper Award, and 2005 UT-Battelle (ORNL) Early Career Award for Engineering Accomplishment. He was also a recipient of an R&D100 Award in 2014.

InterPACKICNMM2015-48703: Recent Advances in Automotive Power Electronics and Electric Machines at ORNL The Power Electronics and Electric Machinery (PEEM) Group at Oak Ridge National Laboratory has been a leader in the electric traction drive research for passenger electric and hybrid-electric vehicles. The group focuses on wide bandgap electronics applications of dc-dc converters, inverters, and chargers including advanced device packaging to meet and exceed the DOE Electric Drive Technologies targets and goals. On the electric motor side, PEEM focuses on reduced rare-earth permanent magnet or no permanent magnet electric motors. While creating novel topologies for motors and inverters, PEEM is also looking into advanced manufacturing technologies including the recently announced world's first 50% 3D-printed wide bandgap-based inverter. This presentation will include the recent advances in these research areas.

Ercan Dede, Toyota Research Institute of North America

Ercan M. Dede received his B.S. degree and Ph.D. in mechanical engineering from the University of Michigan, and a M.S. degree in mechanical engineering from Stanford University. Currently, he is a manager in the Electronics Research Department at the Toyota Research Institute of North America. His group conducts research on advanced vehicle electronics systems including power semiconductors, advanced circuits, packaging, and thermal management technology. He has over 20 issued patents and more than 30 articles in archival journals and conference proceedings on topics related to design and structural optimization of thermal, mechanical, and electromagnetic systems. He is an author of a recently published book entitled 'Multiphysics Simulation: Electromechanical System Applications and Optimization.'

InterPACKICNMM2015-48028: Implications of High Heat Fluxes on Cold Plate Design for Automotive Electronics Future automotive electronics will dissipate higher heat fluxes (~1000 W/cm2) due to smaller package size. In this light, considerable effort and significant investment is being targeted at the search for new, efficient heat transfer technologies. Jet impingement with phase change has shown to provide high levels of performance when compared to traditional single-phase liquid cooling. Thus, this presentation is focused on cooling challenges associated with future automotive electronics and how advanced cold plate design techniques are required to address them. Specifically, strategies to enhance two-phase cooling performance will be discussed including the use of optimized inlet manifolds for uniform fluid delivery, multi-scale surfaces that enable higher critical heat fluxes, and engineered vapor extraction manifolds for efficient fluid removal.

10-1-3 Scalable and Integrated Nanotechnology

French Room **July 7, 9:30-11:00 AM**

Session Organizer and Moderator: Professor Debbie G. Senesky, Stanford University & Carl Arft, SiTime Corporation

Abstract: These technology update talks will review recent achievements in nanotechnology (materials, sensors and electronics) and integration approaches that allow engineering systems to span numerous length scales (from nano to macro). In addition, these talks will highlight the opportunities and challenges associated with creating reliable and commercialized products and systems using scalable and integrated nanotechnology.

Dr. Meyya Meyyappan, NASA Ames Research Center in Moffett Field, CA

Meyya Meyyappan is Chief Scientist for Exploration Technology at NASA Ames Research Center in Moffett Field, CA. Until June 2006, he served as the Director of the Center for Nanotechnology. He is a founding member of the Interagency Working Group on Nanotechnology (IWGN) established by the Office of Science and Technology Policy (OSTP). The IWGN is responsible for putting together the National Nanotechnology Initiative. Dr. Meyyappan has authored or co-authored over 300 articles in peer-reviewed journals and made over 250 Invited/Keynote/Plenary Talks in nanotechnology subjects across the world and over 200 seminars at universities. His research interests include carbon nanotubes, graphene, and various inorganic nanowires, their growth and characterization, and application development in chemical and biosensors, instrumentation, electronics and optoelectronics.

InterPACKICNMM2015-48848: Nanotechnology: Development of Practical Systems & Nano-Micro-Macro Integration

There are strong nanotechnology research programs across the world with every conceivable application in all economic sectors. Basic discoveries have progressed at an amazing pace, as evidenced by the accumulation of publications in the literature. At present, the development of practical systems and commercial products is the next big challenge. Nanoscale is not a human scale. In many cases, development of practical systems demands seamless integration of nano-micro-macro to produce scaled components and processes. While the ultimate vision in nanotechnology may be an entirely bottom-up approach to building systems, it is unrealistic to expect this to happen anytime in the foreseeable future. Only realistic possibility to achieve tangible results in a reasonable time frame, before the stakeholders run out of patience, is to use nanomaterials in a hybrid approach that involves a systematic nano-micro-macro integration. Such an approach will also allow us to utilize the existing infrastructure in the micro area (MEMS, microelectronics) from the last couple of decades, which would make economic sense. This talk will expand on this theme on product and system development using nanomaterials and nanotechnology. Examples will include a carbon nanotube (CNT) based chemical sensor that has been tested for monitoring air quality in the crew cabin in the International Space Station in 2009 and further developed for security applications; a CNT based biosensor for water quality monitoring and health monitoring; CNT-based X-ray tubes for security and other applications; supercapacitors, and several other developments we have been working on for the last 5-8 years. The author thanks all past and present NASA Ames colleagues for their contributions to the application development efforts, especially Jing Li, Yijiang Lu, Jessica Koehne, Cattien Nguyen, Jinwoo Han, Beomsok Kim, Ami Hannon and Michael Oye.

Professor Liwei Lin; University of California, Berkeley

Professor Liwei Lin received PhD degree from the University of California, Berkeley, in 1993. He was an Associate Professor in the Institute of Applied Mechanics, National Taiwan University, Taiwan (1994-1996) and an Assistant Professor in Mechanical Engineering Department, University of Michigan (1996-1999). He joined the University of California at Berkeley in 1999 and is now Professor at the Mechanical Engineering Department and Co-Director at Berkeley Sensor and Actuator Center, an NSF/Industry/University research cooperative center. His research interests are in design, modeling and fabrication of micro/nano structures, sensors and actuators as well as mechanical issues in micro/nano systems including heat transfer, solid/fluid mechanics and dynamics. Dr. Lin is the recipient of the 1998 NSF CAREER Award for research in MEMS Packaging and the 1999 ASME Journal of Heat Transfer best paper award for his work on micro scale bubble formation. He led the effort to establish the MEMS division in ASME and served as the founding Chairman of the Executive Committee from 2004-2005. He is an ASME Fellow and has 16 issued US patents in the area of MEMS. He was the general co-chair of the 24th international conference on Micro Electro Mechanical Systems. Currently, he serves as a subject editor for the IEEE/ASME Journal of Microelectromechanical Systems and the North and South America Editor of Sensors and Actuators –A Physical.

InterPACKICNMM2015-48849 Nano to Macro: Opportunities and Challenges in Scalable Integration

Nanomaterials with 0-, 1 and 2-dimensional constructions have attracted great research interests in recent years due to their unique mechanical, electrical, optical and/or chemical properties. For example, the large surface area-to-volume ratio of these materials make them prime candidates in sensing applications in the fields such as MEMS (Microelectromechanical Systems) and NEMS (Nanoelectromechanical Systems). In this talk, the properties of some key nanomaterials will be introduced first leading toward to their possible macro scale applications. Fundamentals in the synthesis processes of these nanomaterials are briefed as they are the foundations and vital elements in any further integration and commercialization develop-

ments. Specific laboratory-scale applications examples of nanomaterials in electronic components, mass/gas sensors, supercapacitors, and other systems will be presented to illustrate the routs from nanometer scale materials to macro scale devices. In order for these nanomaterials to be successfully utilized in macro scale systems, scalable integration with high yield has to be established and I will discuss the possible approaches, opportunities and challenges.

10-1-4 High Temperature & Harsh Environment Electronic Devices & Packaging

French Room **July 8, 1:00-2:30 PM**

Session Organizer and Moderator: Professor F. Patrick McCluskey, University of Maryland

Abstract: There is a growing need for electronics to withstand high temperature and/or harsh environments in applications ranging from energy exploration and generation to transportation. The industry is rapidly witnessing the adoption of COTS parts and cutting edge technologies into such applications. In this session, the status and gaps in device and packaging technologies for high temperature and harsh environment electronic systems will be discussed.

Dr. Kaustubh Nagarkar, GE Global Research Center

Kaustubh Nagarkar is a Senior Engineer at GE Global Research in upstate New York. His research has focused on packaging and systems development in the areas of high temperature downhole electronics, subsea sensors, photovoltaic, MEMS, and medical electronics. Kaustubh has 27 publications and 19 filed/issued patents. He is a member of ASME and IEEE. He completed his MS ('03) & PhD ('06) from Binghamton University.

InterPACKICNMM2015-48850, High Temperature (›200°C) Packaging for Downhole Applications

Downhole tools for Geothermal or Oil & Gas applications are utilizing increasing amount of integrated electronics. There is a growing need for tools that are smaller and withstand higher operating temperatures at harsh shock and vibration conditions. The electronic assemblies comprising such tools are often a limiting factor. An overview of Measurement While Drilling (MWD) systems – that monitor formation properties, wellbore geometry, drilling system orientation, and mechanical properties during the drilling process – will be provided as an example. Such systems are required to continuously sustain high temperatures (150°C+), pressures (-20,000 psi), and shock/vibrations (500G for 0.5ms/20gRMS) for thousands of hours. In this presentation, the challenges associated with the package materials and assembly processes for electronics in high temperature downhole environments will be discussed. Recent technical trends and advancements will also be discussed.

Professor Debbie G. Senesky, Stanford University

Professor Senesky received the B.S. degree in mechanical engineering from the University of Southern California in 2001. She received the M.S. degree and Ph.D. degree in mechanical engineering from the University of California, Berkeley in 2004 and 2007, respectively. She was a Design Engineer in 2007 for GE Sensing (formerly known as NovaSensor). She was a researcher specialist in 2008 at the Berkeley Sensor and Actuator Center (BSAC) developing sensing technology for extreme harsh environments. In 2012, she was appointed to the faculty at Stanford University in the Aeronautics and Astronautics Department. In recognition of her research, she has received the Space Technology Research Opportunities Early Faculty Career Award from the National Aeronautics and Space Administration.

InterPACKICNMM2015-48865 GaN, SiC and AlN for Harsh-environment Sensors and Electronics

Wide bandgap semiconductor materials such as gallium nitride (GaN), silicon carbide (SiC) and aluminum nitride (AlN) are inherently temperature-tolerant, radiation-hardened and chemically inert which can extend the operation regime of sensors and electronics to harsh conditions (e.g. high power levels, subsurface environments, combustion environments, and deep space). In addition, wide bandgap semiconductor materials are often simultaneously piezoelectric, piezoresistive and pyroelectric, which can be leveraged in the design of a multitude of micro- and nano-scale devices such as sensors, actuators and energy harvesters in a single material layer. In this talk, a review of the advancements in manufacturing technology such as thin film growth, bulk micromachining and contact metallization for wide bandgap semiconductor materials are presented. In addition, compelling results of actual wide bandgap device operation at temperatures as high as 600°C will be reviewed. These robust material sets can serve as a platform for the realization of sensor, actuator and electronic systems that can operate and collect data under the most hostile conditions.

10-1-5 Tech talk on Energy, Health and Water-Applications of Nano-, Micro- and Mini-Scale Devices

French Room **July 7, 2:45-4:15 PM**

Session Organizer and Moderator: Professor Saeed Moghaddam, University of Florida

Abstract: This panel will examine means by which the field of enhanced heat/mass transfer may benefit from the enormous potential that some advanced manufacturing techniques, such as additive manufacturing, can offer in development of next generation heat/mass transfer surfaces, fluid management devices, and thermal management systems as a whole. Latest progress in 3D printing of metals, polymers, and composites will be reviewed and their application to thermal management will be discussed. The panel members represent top expertise from academia, end user industries, and additive manufacturing supplier companies.

Professor Norbert Kockmann, TU Dortmund University, Germany

Norbert Kockmann studied mechanical engineering at the Technical University of Munich and completed his Dr.-Ing. in chemical engineering at the University in Bremen. After 5 years in industry as a project manager he joined Freiburg University, IMTEK in 2001 as group leader for micro process engineering. In 2007, Dr. Kockmann joined Lonza Ltd., Visp, Switzerland, as senior scientist responsible for continuous flow processes and microreactor technology. In April 2011, Norbert Kockmann was appointed as full professor for equipment design at TU Dortmund University, Germany. His research interests are on small-scale device for continuous chemical processes, modular design, and process intensification. He is Chief Scientist at INVITE in Leverkusen, a JV between TU Dortmund and Bayer Technology Services. He has published more than 45 journal papers, 6 patents, and 8 book chapters. He is author, co-author, and editor of three monographs on micro process engineering.

InterPACKICNMM2015-48859: Transport Phenomena and chemical reactions in microchannels

Fluid flow in microchannels is research field since decades for electronics cooling and fuels cells, just to name few applications. Laminar flow in microchannels has some peculiarities. Entrance flow and surface roughness was found to be importance in pressure loss and heat transfer calculations. Flow regimes in the transition of laminar to turbulent flow are still not fully understood. Fluid dynamics and mixing in single phase flow can be characterized by pressure loss and energy dissipation rate, while two phase flow needs additional information on the suitable geometry. Two-phase flow phenomena are still under research and exhibit new characteristics. Curved geometries and helical flow with additional microchannel bends is vivid research field, which can be used for chemical reactions and other applications with narrow residence time distribution needs. Fluid dynamics, mixing, and heat transfer are very important for performing exothermic chemical reactions in microchannels. Novel results indicate the complex interplay of the phenomena with changing heat transfer characteristics. Opportunities and challenges are given in the contribution.

Professor Thomas Gaborski, Rochester Institute of Technology, NY, USA

Dr. Thomas Gaborski completed a B.S. in Biological and Environmental Engineering at Cornell University, his M.S. in Biomedical Engineering and his Ph.D. in Biomedical and Environmental Engineering from the University of Rochester. Professor Gaborski's research focuses on the interface of nanomaterials, biology and imaging with the goal of developing novel nanomaterials that lead to improved biological research as well as the treatment of human disease. Understanding fundamental yet complex biological processes requires an ever more sophisticated set of tools. His work in ultrathin nanomembranes creates solutions to the challenges of understanding how cells and biomolecules interact in both healthy and disease states. As a graduate student, Dr. Gaborski was a university presidential fellowship winner and a National Institutes of Health Predoctoral Fellow. His graduate work initially focused on neutrophil recruitment and the biophysics of adhesion molecule interactions. It was during this work that he became involved with the life science applications of a novel class of ultrathin membranes leading to the co-founding of SiMPore in 2007. Dr. Gaborski initially served as head of life science application development at SiMPore and then as President from 2009-2012 during which time he helped lead the production, product development and membrane characterization teams. While working at SiMPore, he was the principle investigator on several NIH innovative research grants, where research concepts have been successfully commercialized into multiple biomedical and materials science products available through leading global distributors. Dr. Gabroski's research activities have resulted in three issued and several pending patents in bionanotechnology.

InterPACKICNMM2015-48860: Ultrathin silicon-based nanomembranes can revolutionize biological separations and serve as advanced cell culture platforms

Engineering improvements to membranes such as more precise pore size control and enhanced biocompatibility have led to incremental improvements in bioprocessing and medical devices. Recently, new classes of ultrathin membranes with thickness below 100 nm have made the promise of revolutionizing medical devices as well as dramatically improving biomolecular and nanoparticle separations for drug development. Silicon-based membranes, such as porous nanocrystalline silicon (pnc-Si), have proven that scalable production of membranes with thicknesses and pore sizes on the nanometer-scale are feasible. Pnc-Si and its derivatives have shown unparalleled permeability and separation properties that are currently being utilized in efforts to miniaturize hemodialysis machines. Additionally, this class of ultrathin membranes enables precise control of cellular microenvironments facilitating directed differentiation of stem cells. A highly permeable membrane can act like a slice of a three-dimensional matrix, but with the benefits of two-dimensional culture in terms of the

simplicity of imaging and cellular harvesting. Additionally, ultrathin silicon-based membranes have optical transparency that enables live imaging and potential integration into optical sensors and devices.

10-1-6 Tuning Transport Phenomena Through Nanoscale Interfacial Engineering

French Room **July 9, 9:30-11:00 AM**

Session Organizer and Moderator: Professor Ali Beskok, Southern Methodist University

Abstract: Over the past 15 years, nanoscale engineering has opened up pathways to enhance transport phenomena by tuning properties of interfaces. The first talk in the session focusses on the manufacturing aspects of interfacial engineering at the nanoscale using carbon nanotube microstructures. The second talk will discuss condensation heat transfer on nanoengineered surfaces

Professor John Hart, Mechanical Engineering and Mitsui Career Development Chair at MIT

John Hart is Associate Professor of Mechanical Engineering and Mitsui Career Development Chair at MIT. Prior to joining the MIT faculty in 2013 he was Assistant Professor of Mechanical Engineering, Chemical Engineering and Art/Design, at the University of Michigan. He has Ph.D. (2006) and S.M. (2002) degrees from MIT, and a B.S.E. (2000) degree from Michigan, all in Mechanical Engineering. At MIT, John leads the Mechanosynthesis Group (http://mechanosynthesis.mit.edu), which creates new machines, materials, and design principles for advanced manufacturing, including carbon nanomaterials, additive manufacturing processes, and origami-inspired design.

InterPACKICNMM2015-48861 Manufacturing of Carbon Nanotube Microstructures for Interfacial Engineering

For more than ten years, widespread research has been devoted to the synthesis, characterization, and integration of carbon nanotube (CNTs) for applications in miniaturized systems including electrical contacts, thermal interfaces, and advanced composite materials. I will provide a perspective on this field, including a review of cornerstone achievements using CNT-based surfaces and interfaces, and the challenges faced translating lab-scale fabrication methods to manufacturing processes at scale. In particular, understanding of the population-based nature of aligned CNT growth has enabled highly consistent CNT forest synthesis, and inspired the use of strain engineering to create freeform three-dimensional (3D) CNT microstructures using standard lithographic patterning. Conformal coating of the CNTs enables wide-range tuning of structural mechanics from those of resilient foams to high-strength solids, along with engineering of electrical conductivity and porosity. New opportunities include CNT-based composites for controlling interfacial transport, engineering of surfaces for multi-scale control of phase change processes, and miniaturization of 3D CNT microstructures to photonic length scales.

Professor Evelyn N. Wang, Mechanical Engineering at MIT

Evelyn N. Wang is an Associate Professor in the Mechanical Engineering Department at MIT. She is also the Associate Director of the Solid State Solar Thermal Energy Conversion (S3TEC) Center, a DOE Energy Frontiers Research Center, at MIT. She received her BS from MIT in 2000 and MS and PhD from Stanford University in 2001, and 2006, respectively. From 2006-2007, she was a postdoctoral researcher at Bell Laboratories, Alcatel-Lucent. Her research interests include fundamental studies of micro/nanoscale heat and mass transport and the development of efficient thermal management, water desalination, and solar thermal energy systems. Her work has been honored with awards including the 2008 DARPA Young Faculty Award, the 2011 Air Force Office of Scientific Research Young Investigator Award, the 2012 Office of Naval Research Young Investigator Award, the 2012 ASME Bergles-Rohsenow Young Investigator Award in Heat Transfer, as well as best paper awards at 2010 and 2014 ITherm and 2012 ASME Micro and Nanoscale Heat and Mass Transfer International Conference.

InterPACKICNMM2015-48862 Nanoengineered Surfaces for Enhanced Condensation Heat Transfer

Nanoengineered surfaces promise enhanced phase-change heat transfer, which has important applications in thermal management, building environment control, water harvesting, desalination, and industrial power generation. In this talk, I will discuss fundamental studies of droplet behavior on nanoengineered surfaces, and the effect of manipulating these fluid-structure interactions on condensation heat transfer. In our work, we elucidated the importance of structure geometry on droplet morphology, growth and departure dynamics. In addition, we demonstrated ?30% higher heat transfer coefficients compared to that on state-of-the-art dropwise condensing surfaces using functionalized copper oxide nanostructures. I will also show that during condensation, nanoengineered surfaces can harness droplets that can gain a net positive charge due to charge separation. Accordingly, electric fields can be used to further enhance condensation heat transfer coefficients by approximately 100% compared to dropwise condensation. These studies provide key insights into the complex physical processes underlying fluid-structure interactions for heat transfer enhancement and also provide a path to achieving increased efficiency in next generation thermal systems.

10-1-7 Mechanistic considerations & Enhancement Techniques for Flow Boiling Heat Transfer in the Microscale

French Room **July 9, 7:45-9:15 AM**

Session Organizer and Moderator: Prof. Vinod Narayanan, University of California at Davis

Abstract: Microscale enhancement of flow boiling heat transfer has been an active area of research for the past 25 years. In the first talk, the various enhancement methods will be categorized based on mechanistic considerations, highlighting some of the most promising approaches and future needs in this area. In the second talk, one of the approaches of enhanced flow boiling will be discussed in detail.

Professor Satish Kandlikar, RPI

Dr. Satish Kandlikar is the Gleason Professor of Mechanical Engineering at RIT (Rochester Institute of Technology). He has worked extensively in the area of pool and flow boiling heat transfer and CHF phenomena at microscale, single-phase flow in microchannels, high heat flux chip cooling, and water management in PEM fuel cells. He has published over 350 journal and conference papers and edited/authored/co-authored handbooks and research books on boiling heat transfer. He is a Fellow member of ASME and a former Associate Editor of ASME Journal of Heat Transfer. He has received the RIT's Eisenhart Outstanding Teaching Award in 1997, Trustees Outstanding Scholarship Award in 2006 and Outstanding Mentor Award in 2013. He has received the 2008 Rochester Engineer of the Year award from Rochester Engineering Society. He is the recipient of the 2003, 2004 and 2005 IBM Faculty Award, 2007 ASME Dedicated Service Award, and 2012 ASME Heat Transfer Memorial Award.

InterPACKICNMM2015-48863 Flow Boiling in Advanced Microchannel Configurations - Opening Diverse Pathways to Meet the High Heat flux Removal Challenge

Flow Boiling in Microchannels has not delivered the anticipated cooling performance for meeting the high heat flux removal demands in electronics cooling applications. Worldwide research has taken a new turn in meeting this challenge by shifting the underlying flow boiling enhancement paradigm and dramatically altering the microchannel configuration. These approaches are based on mechanistic considerations while unorthodox strategies were employed in their implementation to address the two-phase flow and critical heat flux issues. These pathways provide unprecedented possibilities in high heat flux dissipation technologies which hold transformative promise for improved energy efficiencies and material savings in diverse applications as well.

Professor Yoav Peles, University of Central Florida

Professor Yoav Peles is the Chair of the Department of Mechanical and Aerospace Engineering at the University of Central Florida (UCF). Prior to UCF, Professor Peles was the Director of the Mechanical Engineering Program and the Associate Department Head for Graduate Studies in the Department of Mechanical, Aerospace and Nuclear Engineering (MANE) at Rensselaer Polytechnic Institute (RPI). He is an international leader in convective heat transfer in micro domains. Professor Peles published more than 90 peer reviewed journal papers, about 50 conference papers, has several patents, written four book chapters, and is the author of a book entitled Contemporary Perspective on Flow Boiling Instabilities in Microchannels. He organized and co-organized several international conferences and workshops including the ASME International Conference on Nanochannels, Microchannels, and Minichannels 2013 (ICNMM 2013), the International Workshop on Micro and Nano Structures for Phase Change Heat transfer, and the first Gordon Research Conference (GRC) on Micro and Nanoscale Phase Change Heat Transfer (2015). He is a fellow of the American Society of Mechanical Engineering (ASME).

InterPACKICNMM2015-48864 Micro scale Piranha Pin-Fins (PPF) Heat Exchanger

Since the early 2000's, the Microsystems Technology Office (MTO) at the Defense Advanced Research Project Agency (DARPA) has been aggressively pursuing new cooling approaches to support the continuous advancement of a range of electronic systems. The intrachip/interchip enhanced cooling (ICECool) program, announced in mid-2012, seeks to develop new "embedded" thermal management approaches by bringing microfluidic cooling inside the substrate, chip, or package. In this talk, one of these efforts, termed Piranha Pin-Fins (PPF): Voracious Boiling Heat Transfer by Vapor Venting from Microchannels, will be presented and discussed. The PPF micro scale heat sink (HS) includes several advanced features, such as vapor venting chimneys, hydrofoil based pin fins, and reentrant cavities to promote bubble nucleation. The PPF HS is comprised of two substrates – a primary substrate and a booster substrate. The development and experimentation of the primary substrate with a 3M™ engineering fluid, HFE-7000, has been ongoing for the last two years. A parametric study about the heat transfer and pressure drop performance of the primary substrate has been conducted to guide the design of the PPF's shape, dimensions, transverse pitch, and longitudinal pitch. Bulk measurements, as well as local measurements, have been collected. Numerical modeling complemented experiments. To date, the maximum heat flux achieved with HFE-700 for the primary substrate was 676 W/cm2 at surface-to-inlet liquid temperature difference of 55 °C and pressure drop of 45 kPa. The rational, design, development, and results of the PPF heat sink will be presented and discussed. Plans for the development and testing of the system, which include the primary substrate and booster substrate, will be reviewed.

10-1-8 Microfluidic Enabling Technology for Material Synthesis and Cell Assays

Empire Room **July 7, 4:45-6:15 PM**

Session Organizer and Moderator: Professor Carolyn Ren, Univ of Waterloo

Abstract: The field of Microfluidics and Lab-on-a-Chip has been extensively developed over the past two decades with contributions from a wide range of science and engineering disciplines and new branches of research such as two-phase droplet microfluidics being emerged. This technological talk session focuses on both fundamental and applied research of recent developments in microfluidics. Fundamentally, self-assembled structures of droplets in a continuous flow manner, which raises hope for elaborating new materials at high throughput, are investigated and the fundamentals that determine different structures such as chains, triangles, diamonds, tetahedrons, and heterotrimers are discovered and presented. The applied research topic will introduce the tool for the reliable mass production of highly uniform multicellular tumor spheroids which is a model system in cancer research via micro-contact printing and the usage of micro-structured surface modifications as standardized arrays for improving the performance of neurite outgrowth assays resulting in the faster evaluation of neurotoxicity tests. In addition, a microfluidic device for the quasi-instantaneous stimulation of cells is presented which has the potential to gain unprecedented insight into signaling dynamics of cells.

Professor Patrick Tabeling, nMMN ESPCI

He obtained his PhD in 1976 and joined Chargé de Recherches at CNRS in the same year. He spent two years in the US, one as a postdoc in the University of Chicago (1984-1985) while the other as an invited professor at UCLA (1999-2000). After his stay in Chicago, he joined ENS from 1985 to 2000, where he was appointed Directeur de Recherches CNRS, and then joined ESPCI, where he was appointed Professeur. He is the member of various committees, Editorial Boards (Phys. Rev. Lett, Phys. Fluids), Member of the European Academy of Science. He received Stichting and Sorken awards.

InterPACKICNMM2015-48846 Microfluidic self-assembly

Recent progress in colloidal science has led to elaborate self-assembled structures whose complexity raises hopes for elaborating new materials. However, the throughputs are extremely low and consequently, the chance to produce materials of industrial interest, for instance, groundbreaking optical devices, harnessing complete three-dimensional band gaps, is markedly low. We discovered a novel hydrodynamic effect that may unlock this bottleneck. It is based on the dipolar flow interactions that build up when droplets are slowed down by the microchannel walls along which they are transported. Coupled with depletion forces, we succeeded to form, via a continuous flow process, at unprecedented speeds and under exquisite control, a rich ensemble of monodisperse planar and tridimensional clusters, such as chains, triangles, diamonds, tetahedrons, heterotrimers, possessing geometrical, chemical, and/or magnetic anisotropies enabling directional bonding.

Professor Dirk Janasek, Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V

Dirk Janasek received his PhD in biochemistry from Martin-Luther-University at Halle-Wittenberg in Sept 1999 with a specialization in Technical Biochemistry. His PhD focuses on "Development of new enzymatic sensor systems with chemiluminometric signal transduction". Afterwards, he was a postdoctoral fellow from 09/1999–07/2002 at the Institute of Biotechnology, Martin Luther University, Halle- Wittenberg and then the Leopoldina Postdoctoral Fellow from 08/2002–07/2003 at Analytical Centre, Imperial College London. He joined Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V.,Dortmund and Berlin as a staff scientist in August 2003. He is currently responsible for Microfluidics and miniaturized separation techniques in the work group of "System Analysis"

InterPACKICNMM2015-48847 Micro-Structuring for Cell-Based Applications

Besides the obvious advantages of micro-structured devices like smaller footprint, lower sample and reagent consumption, better control of reaction conditions as well as the possibility for multiplexing and sequential workflow design, micro-structuring offers a superb potential to manipulate biological cells due to the coincidence of size. In the talk some approaches established in our lab will be presented. i) A tool for the reliable mass production of highly uniform multicellular tumor spheroids which is a model system in cancer research is made available by the application of micro-contact printing. ii) The usage of micro-structured surface modifications provides a standardized array for the performance of neurite outgrowth assays resulting in the faster evaluation of neurotoxicity tests. iii) A microfluidic device for the quasi-instantaneous stimulation of cells, their temporally precise incubation and subsequent reaction arrest gives the opportunity to obtain unprecedented insight into signaling dynamics of cells.

10-1-9 Thermal Challenges in Recent Advancements in GaN Electronics

French Room **July 9, 1:00-2:30 PM**

Session Organizer and Moderator: Professor Samuel Graham, Georgia Tech

Abstract: The development of GaN high electron mobility transistors is a promising technology for the advancement of future RF-communication systems. In compared to GaAs based material, GaN electronics have a larger breakdown field, higher carrier mobility, and large sheet charge density that allows for operation at high frequency and high power. Applications include both radar and cellular base-stations. However, the promise of GaN RF devices comes with challenges, specifically in managing the large heat fluxes (>1kW/cm2) and self-heating which occurs in these devices. Thus, advanced thermal management solutions are critical in the development of this technology in order to realize the full potential and reliability of GaN transistors. In this talk, Prof. Martin Kuball and Prof. Kenneth Goodson will introduce the fundamental challenges and limits for cooling GaN devices as well as the recent state-of-the-art in terms of their thermal performance. The talk will discuss thermal metrology methods for verifying device performance as well as advancements in metrology methods to understand the thermophysical properties and thermal boundary resistance found in GaN devices. Recent investigations of replacing SiC substrates with CVD Diamond as well as introducing two phase heat transfer to reduce the junction temperature will also be covered. The talk will also takes a fresh look at cooling limits and how they are impacted by achievements in several specific domains of materials research and the associated applied disciplines of embedded cooling and composite substrates.Finally, a discussion of current efforts to advance the properties of CVD diamond to further enhance GaN devices through a DARPA sponsored round robin will be highlighted.

Professor Martin Kuball, University of Bristol, UK

Martin Kuball is a Professor of Physics and the Director of the Center for Device Thermography and Reliability (CDTR) at the University of Bristol in the United Kingdom. He is also the Head of the Micro and Nanomaterials Group at the University of Bristol. Prof. Kuball is a pioneer of the application of Raman thermography to the GaN electronics and has developed numerous metrology techniques to interrogate their electro-thermal response as well as device reliability. He was awarded the Royal Society Wolfson Research Merit Award for his outstanding contributions to the development of GaN on Diamond devices.

InterPACKICNMM2015-48145 Novel Thermal Management of GaN Electronics - Diamond substrates

Microwave and power electronics based on GaN enables the performance of systems and their safe operating area to be driven to 'extremes'. One of the major issues that then arises is thermal management. This includes heat transfer limitations across interfaces, however also the need of incorporating novel high thermal conductivity materials such as diamond. Thermal parameters of these novel device systems and their implications on the near junction temperature in the devices are not well known. The role of interfaces between the GaN transistor and the diamond substrate, and of the diamond thermal properties themselves near this interface are discussed, and novel thermal characterization approaches, such as enabling fast determination of the thermal resistance on the wafer level, as well as of lateral diamond thermal conductivity, are presented.

Professor Ken Goodson, Mechanical Engineering, Stanford University

Ken Goodson is the Bosch Chairman of the Mechanical Engineering Department and the Davies Family Provostial Professor at Stanford University. His lab has graduated 40 PhDs, nearly half of whom are professors at schools including MIT, UC Berkeley, and Stanford. Goodson studied at MIT (PhD 93) and is a Fellow with ASME, IEEE, APS, and AAAS. Recognition includes the ASME Kraus Medal, the Heat Transfer Memorial Award, the THERMI Award, plenary lectures at INTERPACK, ITHERM, PHONONS, SEMITHERM, and THERMINIC, and best/outstanding paper awards at SEMITHERM, ITHERM, and the IEDM

InterPACKICNMM2015-48694 Near Junction Transport and the Limits of Electronics Cooling

Throughout an extensive lengthscale hierarchy, from individual transistors to chips and packaging and beyond, materials innovation and nanostructuring are allowing us to think more concretely about whether there are fundamental limits for the thermal management of electronic systems. What is the highest power density that can be managed by an individual transistor, within a chip, or on a board or power electronics module? The answers are evolving with breakthroughs in the synthesis, integration, and nanostructuring of materials. This presentation takes a fresh look at cooling limits and how they are impacted by achievements in several specific domains of materials research and the associated applied disciplines of embedded cooling and composite substrates. We will discuss recent progress at Stanford and by our collaborators on power transistor cooling using diamond composite substrates, as well as the latest microfluidic heat sink approaches that use nanostructured materials for wicking and phase separation.

10-1-10 Thermal, Thermo-mechanical challenges in Packaging of Semiconductor Lasers

French Room **July 6, 5:30-7:00 PM**

Session Organizers: Mani Prakash, Intel Corp & Dr. Satish Chaparala, Corning Incorporated

Abstract: The fields of optics and photonics have underwent dramatic technical advances over the past several decades and have

established themselves as key enabling technologies across many different industries. We will discuss the thermal and thermo-mechanical issues in Packaging of semiconductor lasers have become increasingly important.

Professor Manijeh Razeghi, Northwestern University

Manijeh Razeghi (Fellow, IEEE) received the Doctorat d'État es Sciences Physiques from the Université de Paris, France, in 1980. After receiving her doctoral degree, she joined Thomson-CSF (Orsay, France) as a Senior Research Scientist and then the Head of the Exploratory Materials Laboratory at from 1980 to 1991. While at Thomson, Dr. Razeghi developed and implemented modern metalorganic chemical vapor deposition (MOCVD) epitaxial growth for entire compositional ranges of III-V compound semiconductors and heterostructures. She realized the first InP Quantum wells and Superlattices and demonstrated the marvels of quantum mechanics in the low dimensional world. Her pioneering work on InP based compound semiconductors culminated in her 1989 publication of The MOCVD Challenge Volume 1: A Survey of GaInAsP-InP for Photonic and Electronic Applications. She joined Northwestern University, Evanston, IL, as a Walter P. Murphy Professor and Director of the Center for Quantum Devices in Fall 1991, where she created the undergraduate and graduate program in solid-state engineering and the Center for Quantum devices. She is one of the leading scientists in the field of semiconductor science and technology, pioneering in the development and implementation of major modern epitaxial techniques. Her current research interest is in nanoscale optoelectronic quantum devices. She has authored or coauthored more than 1000 papers, 15 books, and more than 30 book chapters. She holds 50 U.S. patents and has given more than 1000 invited and plenary talks. She received the IBM Europe Science and Technology Prize in 1987, the Achievement Award from the SWE in 1995, the R.F. Bunshah Award in 2004 and many best paper awards. Dr. Razeghi is an elected Fellow of SWE (1995), SPIE (2000), IEC (2003), OSA (2004), APS (2004) IOP (2005), IEEE (2005) and MRS (2008).

InterPACKICNMM2015-48705 Applications and Thermal Challenges for Quantum Cascade Lasers

Microwave and power electronics based on The quantum cascade laser (QCL) is a compact semiconductor laser source that can be designed to emit from the mid-infrared to THz (3< lambda <300 microns). The QCL operates at room temperature over much of this range and has the potential for extremely high output powers. This fortuitous combination of characteristics has made the QCL a major player for long distance spectroscopy, communication, and directed energy applications (like infrared countermeasures). Combining high power and compact size is challenging, however. Mid-infrared QCLs typically require an input power density of 10-100 kW per square centimeter. Even with power conversion efficiencies up to 27% at room temperature (demonstrated in my group at CQD/NU), a lot of heat is generated is a very small volume. One of the current challenges to scaling output power is finding new ways to efficiently manage heat removal. In this talk, some of the recent highlights in QCL technology will be described relative to their impact on strategic applications for industry and the government. Current challenges related to improving wavelength coverage, efficiency and packaging will also be discussed.

Professor Avi Bar Cohen, Mechanical Engineering, University of Maryland

Dr. Avram Bar-Cohen is an internationally recognized leader in thermal science and technology, an honorary member of ASME, and Fellow of IEEE, as well as Distinguished University Professor in the Department of Mechanical Engineering at the University of Maryland. His publications, lectures, short courses, and research outcomes, as well as professional service in ASME and IEEE, have helped to create the scientific foundation for the thermal management of electronic components and systems and pioneered techniques for energy-efficient sustainable design of manufactured products. His current research focuses on on-chip thermoelectric and two-phase microchannel coolers for high heat flux electronic components, thermal control of solid-state lighting systems, and polymer-fiber composite heat exchangers for seawater applications. He is the Editor-in-Chief of World Scientific Press' forthcoming Encyclopedia of Thermal Packaging. From 2001 to 2010 he served as the Chair of Mechanical Engineering at Maryland and is currently on assignment as a Program Manager in the MTO at the Defense Advanced Projects Agency in Virginia.

InterPACKICNMM2015-48902 Nanofabricated Diamond Substrates for High Heat Flux Devices

The proliferation of high heat flux semiconductor devices, including laser diodes and HEMT transistors, has focused renewed attention on the substantial near-junction temperature rise experienced by these devices. Due to their relatively low thermal conductivity, device performance, as well as functional stability and reliability, is often thermally-limited by heat diffusion in the "native" substrate. Recent efforts, largely funded by DARPA-MTO, have demonstrated the thermal and functional benefits of replacing these native substrates with high thermal conductivity synthetic diamond. This lecture will begin with the motivation for considering diamond substrates for both extended (CW) and short pulse (low duty cycle) operation of high flux devices, including the effect of thermal conductivity, thermal effusivity, and the thermal boundary resistance on phonon transport. Attention will then turn to the in-situ growth of diamond substrates and vias, as well as bonding of wide-band epitaxy to freely grown diamond. The lecture will conclude with a description of current integral diamond microcooler R&D, enabling microfluidic embedded cooling of the highest flux semiconductor devices.

10-1-11 Data Center – Thermal Management

French Room **July 6, 3:30-5:00 PM**

Session Organizers: Dr. Madhu Iyengar, Google, Mountain View, CA

Abstract: The last decade as witnessed a steady growth in the power footprint of Information Technology data centers which are made up of server and storage equipment that are either air or liquid cooled at the electronics level with a variety of facility level designs used to reject the heat extracted from the IT to the external environment. This session will focus on two very different but interesting technologies, namely, water cooled servers and data center infrastructures geared towards High Performance Computing (HPC) supercomputers and energy efficient indirect outside air-cooling for air-cooled IT data centers

Michael J. Ellsworth, Jr., P.E.

Mr. Ellsworth, a Senior Technical Staff Member with IBM in Poughkeepsie, NY, is currently the Technical Manager of the Advanced Thermal Energy Efficiency Lab. He received his B.E.M.E. (1984) and M.E.M.E. (1988) from Manhattan College in Riverdale, NY. While at IBM he has explored improved thermal management for applications ranging from laptops to high-end servers and has investigated thermal technologies encompassing air, water, and refrigeration. He is a member of ASHRAE and IEEE, and is a Fellow of ASME where he served on the Electronics and Photonics Packaging Division Executive Committee and has chaired the K-16 Committee on Heat Transfer in Electronic Equipment. He has authored or co-authored nearly more than 40 technical papers and is a co-inventor on over 190 US patents.

InterPACKICNMM2015-48900 Liquid (Water) Cooling Today's High Performance Computers

Early bipolar large system (mainframe) computers started out as air cooled systems but evolved to be water cooled for a variety of reasons, mainly to cope with relatively high component heat fluxes and high overall system heat dissipation levels. The advent of and transformation to low powered CMOS chip technology in the early 1990's resulted in departure away from water cooling and back to the more traditional air cooling pervasively used to this day. Once again, particularly in the high performance or supercomputer space, water cooling is back on the scene, but is not implemented as it was before and not for the same reasons. We'll briefly revisit how and why water cooling was done in the past and then take a look at how and why water cooling is being done today with a brief glimpse as to how water cooling may be done in the future.

Philip LePoudre PhD, P.Eng., Principal Engineer at Venmar CES

Philip LePoudre PhD, P.Eng., is a Principal Engineer and Technology Lead in the Nortek Air Solutions Center of Excellence for Energy Recovery in Saskatoon, SK. He is involved in the design of world class evaporative cooling technologies for Data Centers, including indirect evaporative cooling systems, air and liquid cooling, and new advancements using membrane energy exchanger technology. Philip was trained as a mechanical engineer at the University of Saskatchewan and has a doctoral degree in Applied & Computational Mathematics from the Florida State University. His research expertise is in Computational Fluid Dynamics, Computational Aeroacoustics and High Performance Computing. Before joining Nortek Air Solutions, he was a Lecturer and Research Associate at the University of Saskatchewan.

InterPACKICNMM2015-48901 Indirect Evaporative Air Side Economizers for Data Center Cooling

The market for evaporative cooling systems for data centers is growing very quickly since these systems deliver high operating efficiencies and rapid return on investment. State-of-the-art indirect evaporative cooling systems can maintain stable humidity levels and low air contamination levels in the white space, while delivering data center power usage effectiveness (PUE) values between 1.05 – 1.2. The cooling power and efficiency of these systems improves as the server inlet temperature set point and the temperature delta across the rack are increased. New developments in evaporative cooling cycles and the use of membrane exchanger technology will allow evaporative cooling systems to cover 100% of the data center annual cooling load in almost all climate conditions in North America. Membrane evaporative exchangers use a water-permeable membrane to separate the cooling water and purge air stream. These exchangers offer a number of significant benefits over other types of direct contact wetted media or wetted exchanger designs, including the potential to use reclaimed water sources. Membrane exchanger evaporative coolers can also be used in direct liquid cooling applications and will deliver very high cooling densities and operating efficiencies. This presentation will review the current capabilities and operating requirements of advanced indirect evaporative coolers and will highlight new opportunities for research and development of evaporative cooling technologies for data centers

TUTORIAL 11-4-1

RELIABILITY CHALLENGES IN MICROELECTRONICS PACKAGING

Garden Room, Lobby Level **July 6, 3:00-7:30 PM**

Tutorial Lecturers:

Prof. Ganesh Subbarayan, Purdue University

Prof. Abhijit Dasgupta, University of Maryland at College Park

Dr. Krishna Darbha, Microsoft Corporation

Dr. Sandeep Sane, Intel Corporation

Interfaces and Failure

Ganesh Subbarayan, Professor, School of Mechanical Engineering, Purdue University, West Lafayette, IN 47907-2088

Ganesh Subbarayan is a Professor of Mechanical Engineering at Purdue University. He began his professional career at IBM Corporation (1990-1993). He holds a B. Tech degree in Mechanical Engineering (1985) from Indian Institute of Technology, Madras and a Direct Ph. D. (1991) in Mechanical Engineering from Cornell University. Dr. Subbarayan's research is in reliability of Microelectronic devices and packages. Among others, Dr. Subbarayan is a recipient of the 2005 Mechanics Award from the ASME EPP Division and the NSF CAREER award. Several of his publications co-authored with his students have been recognized with awards. He is a Fellow of ASME as well as IEEE, and he served as the Editor-in-Chief of IEEE Transactions on Advanced Packaging during 2002-2010. He also served as the topical editor for John Wiley's Encyclopedia of Electrical and Electronics Engineering during 2011-2012.

Abstract: The physical causes underlying the failures in microelectronic devices and packages commonly relate to the mechanics of fracture and the thermodynamics of diffusion possibly coupled with interfacial reaction. While the growth of cracks in brittle dies and ductile solder joints as well as void growth due to electromigration have been studied for many years, increasingly, with the use of flexible polymeric substrates, complex phenomena such as wrinkling of thin films on substrates, and diffusive transport of species as well as reaction at interfaces are becoming important reliability concerns. The tools necessary for modeling such complex phenomena are varied and rarely available in commercial software. In this tutorial, I will describe several modeling case studies highlighting the foundational elements that together provide the capability to address the above reliability concerns. The case studies include crack initiation and growth in inter-layer dielectric (ILD) stacks, ductile fracture in solder joints, debonding in thin films due to buckling, interfacial void growth in multiphase solids due to electromigration, and growth/stability analysis of intermetallic compounds (IMC) in SnAgCu solder joints. I will end the tutorial with a brief discussion of design strategies against the above failure phenomena.

Fatigue': why it poses reliability challenges in electronic systems.... and what to do about it

Abhijit Dasgupta, Jeong H. Kim Professor of Mechanical Engineering, (CALCE), University of Maryland, College Park, MD

Abhijit Dasgupta is with 35 years of expertise in the microscale and nanoscale mechanics of constitutive behavior and damage mechanics of engineered materials. He holds a Ph.D. in Applied and Theoretical Mechanics from the University of Illinois, and has been a principal investigator at the Center for Advance Life Cycle Engineering (CALCE) at UMD for the past 25 years. He is an expert in developing static and dynamic material failure models for reliability assessment, for real-time health monitoring, and for accelerated stress testing. He has many years of experience in advanced computational mechanics for multi-physics, multi-scale, static and dynamic problems with time-dependent material behavior, which arise frequently in microelectronic and photonic systems, in MEMS, and in nanotechnologies. He has published over 15 book chapters, over 100 articles in archival journals; over 100 papers in refereed conference proceedings and made over 100 other presentations at conferences. He has served on editorial boards of two international archival journals; and has chaired several international conferences including the 2007 IEEE ASTR conference and the EPPD Track of the 2009 ASME IMECE conference. He reviews papers for all the leading journals in electronic systems; has presented over 45 workshops and short courses nationally and internationally; helped form research and educational roadmaps for the electronics industry, and provided consulting services to numerous industry leaders. He has received eight major awards in his career for excellence in research and education, including the ASME EPPD Mechanics Award. He is an ASME Fellow and currently serves as the vice chair of the Electronic and Photonics Packaging Division of ASME.

Abstract: The tutorial will start with an overview of the multi-physics degradation mechanisms that pose the dominant reliability risks in complex electronic assemblies. The presentation will then focus on cyclic fatigue damage, as it has long been recognized as an important wear-out mechanism that contributes to reliability hazards in complex electronic assemblies. This tutorial will provide an overview of: • dominant fatigue failure sites/mechanisms in electronic systems • various sources of cyclic stresses that are responsible for fatigue damage in multi-physics assemblies like electronic systems •multi-scale materials and design knowledge needed to ensure that electronic systems are sufficiently fatigue resistant • potential manufacturing defects that can compromise fatigue endurance of electronic systems • stress testing methods to verify the fatigue resistance of electronic systems • diagnostic and prognostic methods for in-situ monitoring of fatigue degradation and remaining useful life in functional electronics throughout their life cycle. This tutorial is intended for electronics packaging engineers who are responsible for developing, deploying and supporting reliable electronic systems. A few selected case studies will be provided to illustrate the discussed principles.

Designing in Reliability of Complex Electronic Devices: System Level Impact of Multi-physics Interaction

Krishna Darbha, Sr. Director, Reliability, Microsoft Devices Group, Microsoft Corp., Redmond, WA

Krishna Darbha, Senior Director of Reliability at the Microsoft Devices Business Group (MDG) Group in Microsoft, has been w/ Microsoft for the past 13 years and is currently responsible for Reliability of Surface. He has managed Reliability of many complex multi-physics consumer electronic products and worked on products like Xbox, PCHW peripherals, Zune and Surface Table Top. Prior to Microsoft he was with IBM in the Microelectronics Division responsible for multi-physics analysis of cutting-edge microelectronic modules. He obtained his Ph.D. in Mechanical Engineering from the University of Maryland (College Park) in 1999. He covers Reliability through the entire product life cycle starting from up-front product development relying on quantification of user scenarios, efficient virtual qualification techniques, qualification of supply-chain, development of acceleration models for new failure modes, demonstration of reliability goals and quality assurance via ORT and other CTQ monitors in mainstream production. He is a member of ASME and IEEE and contributed through publishing and reviewing papers in conferences and journals for over 15 years. He currently holds 10 patents.

Abstract: The reliability of highly integrated systems depend strongly on the interactions of properties of materials, electronic sub-systems, and power/thermal consumption in a wide range of use environments. The devices are often exposed to complex states of mechanical, thermal and chemical ambient conditions. Modeling, characterization, and management of these multi-physics interactions at the system scale remain a critical challenge. This talk will discuss the development efforts of designing in reliability at Microsoft Devices Group to address this important challenge and ensure we meet or exceed customer's expectations. We will introduce modeling/simulation methods and experimental platforms to analyze the effects of multiple interacting physical phenomena and present case studies. The talk will conclude with a discussion on the challenges going forward.

Changing Role of Mechanics in Electronic Packaging World: Opportunities & Challenges

Sandeep Sane, Principal Engineer, ATTD, Intel Corporation, Chandler, AZ 85226

Sandeep Sane is a Principal Engineer at Intel. He received his M.S./Ph.D. from California Institute of Technology, Pasadena in Aerospace Engineering with major in Solid Mechanics. He holds B.S. in Mechanical Engineering from Indian Institute of Technology, Bombay (Mumbai).

Sandeep is currently responsible to drive novel technical solutions across packaging technologies in the Assembly and Test Technology Development (ATTD) organization, Intel Corp., Chandler. He has filed for more than 15 patents and has published several technical articles in various conferences and journal proceedings. He is also a recipient of numerous awards across Intel for his technical contributions.

Abstract: With ever increasing complexity of the electronic packaging, the role of mechanics is expanding from its traditional space of understanding package reliability to more into optimization of package design and assembly processes to deliver high process yields and cost effective packages. This presentation will first provide an overview of current and future package technologies and associated demands in the different market segments, followed by focusing on some of the recent progress made in addressing some of the mechanics and materials challenges. It will include case studies demonstrating role of mechanics in resolving silicon package interaction challenges, improvement package reliability based on use conditions and will highlight some of challenges such as package warpage and surface mount ability posed by ever increasing demands of ultrathin-package.

TUTORIAL 11-4-2

TWO PHASE BOILING COMPUTATIONAL MODELLING CHALLENGES

California Room, Mezzanine **July 6, 3:00-7:30 PM**

Models capturing the physics of two phase flow phenomena and heat transfer in microchannels are inherently complex. Some of the challenges are: modeling the transitions between the bubble/slug/annular flow regimes, dealing with both adiabatic and diabatic flows, predicting CHF, bubble growth and coalescence, interface tracking/capturing, system pressure drops, conjugate heat transfer, estimating near wall heat transfer coefficients, etc. Currently, the numerical techniques employed to address these challenges are: VOF (volume of fluid), LSM (level set method), CIP (cubic interpolated method), lattice Boltzmann method, CSF (continuum surface force) method, phase change method, etc. There is no standard best practice established using existing commercial CFD tools to solve these challenges to make these models run faster, cheaper and easier to use. The current call for two-phase numerical papers focuses on the above and related topics, and to finding the existing gaps that needs to be filled in this area for better understanding of microchannel two phase flow and heat transfer.

Tutorial Lecturers:

Dr. Mirco Magnini of Ecole Polytechnique Fédérale de Lausanne

Prof. Mario Trujillo of the University of Wisconsin

Prof. Gustavo Rabello Anjos of Rio de Janeiro State University

Prof. Abhijit Mukerjee of California State University Northridge

CFD simulation of two-phase flows with Eulerian technique

Dr Mirco Magnini, Laboratoire de Transfert de Chaleur et de Masse (LTCM) - Laboratory of Heat and Mass Transfer, EPFL

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Webhttp://ltcm.epfl.ch/page-88365-en.html

Abstract: This tutorial presents a review of the most advanced Eulerian methods for modeling two-phase flows with a CFD technique. The Eulerian approach consists in modeling the dynamics of the interface between two immiscible phases across a fixed computational grid. This allows easier and more robust implementations than moving mesh techniques where the computational grid matches the boundary between the phases, but requires particular care when advecting the interface and computing interfacial effects, for instance surface tension force and phase change, because the interface topology has first to be reconstructed. Methods that do not perform surface tracking, namely Eulerian-Lagrangian and Eulerian-Eulerian, are briefly reviewed here, while larger space is devoted to the most widely used surface tracking schemes, i.e. Front Tracking, Level Set, and Volume Of Fluid methods, because of their capability to provide a precious insight into the local dynamics and transient evolution of the flow. As the reliability of surface tracking simulations strongly depends on the accuracy of the estimation of the interfacial effects, the latest advances on the modeling of surface tension and phase change are outlined. These include higher order geometrical schemes to reconstruct the interface topology which is required in the surface tension force calculation, and phase change models which assume that a temperature and a pressure jump can hold at the interface. Three-phase contact lines and evaporation microlayers, which become relevant in microscale two-phase flow simulations, are debated. A brief overview of the most known commercial and opensource CFD packages for two-phase flow simulations is given. Afterwords, the results of some selected computational studies performed by means of a numerical framework based on an Eulerian approach to advect the interface are presented. These include the investigation of the dynamics of isolated confined air bubbles in liquid flows through circular horizontal microchannels; modeling of slug flows within circular microchannels under saturated flow boiling conditions; study of trapped water flushed by flowing oil in upward-inclined oil pipelines.

Implicit Interface Capturing Strategies in Simulation Efforts

Prof. Mario Trujillo of the University of Wisconsin

Dr. Mario F. Trujillo is an associate professor in the Department of Mechanical Engineering at the University of Wisconsin-Madison. He has been involved in modeling and simulation of two-phase flows, including the Lagrangian-Eulerian treatment, droplet phenomena, and liquid sprays. He is a former DOE Computational Science Graduate fellow and worked at the Los Alamos National Laboratory (T-3 Fluid Dynamics) developing two-phase flow codes for high-pressure conditions. His current interests include the numerical development and utilization of fully-resolved interfacial capturing techniques to study a variety of two-phase flows.

Abstract: The focus of this tutorial is to provide an introduction to implicit interface capturing methods for directly dealing with two-phase flows. The target audience consists of researchers involved in simulation efforts outside this immediate area and to experimental researchers who wish to gain some basic understanding for the correct interpretation of results generated with these methods. A description of the most popular approaches, which consist of the Volume-of-Fluid (VoF) and Level Set methods, will be given along with an honest exposition of the strengths and weaknesses of each of these approaches. The material will contain a mixture of content, which is already part of the established literature, along with new and yet-to-be published work. The strengths of these methods will be compared to more traditional treatments of two-phase flows, paying particular attention to previous modeling assumptions, and how they are relaxed in these relatively new numerical strategies. After providing an overview of how the conservation laws (mass, momentum, and energy) are implemented within the VoF and Level Set framework, the limits of these approaches in dealing with realistic confined flow boiling will be described.

Moving Mesh-Moving Boundary Method for Two-Phase Flows with Phase Change

Gustavo ANJOS, Norberto MANGIAVACCHI, Jose PONTES, John R. THOME

Abstract: A modern numerical method is described to study two-phase flows for single and multiple bubbles with phase change. The fluid flow equations are developed in 3-dimensions based on the Arbitrary Lagrangian-Eulerian formulation (ALE) and the Finite Element Method (FEM), creating a new two-phase method with an improved model for the liquid-gas interface. A successful adaptive mesh update procedure is also described for effective management of the mesh at the two-phase interface to remove, add and repair surface elements, since the computational mesh nodes move according to the flow. The Lagrangian description explicitly defines the two-phase interface position by a set of interconnected nodes which ensures a sharp representation of the boundary, including the role of the surface tension. The methodology proposed for computing the curvature leads to accurate results with moderate programming effort and computational cost and it can also be applied to different configurations with an explicit description of the interface. Such a methodology can be employed to study accurately many problems such as oil extraction and refinement in the petroleum area, design of refrigeration systems, modelling of biological systems and efficient cooling of electronics for computational purposes, being the latter the aim of this research. A comparison of the obtained numerical results to the analytical solutions and simulation results will be presented, thus proving the capability of the proposed new methodology.

Numerical modeling of vapor bubbles during nucleate boiling

Prof. Abhijit Mukerjee of California State University Northridge

Prof. Mukherjee is currently a faculty in the department of Mechanical Engineering and Director of Energy Research Center at California State University, Northridge. Dr. Mukherjee did his undergraduate in Power Plant Engineering from Jadavpur University in India and MS in Mechanical Engineering from Villanova University. He received his PhD from UCLA. His research interests are multiscale modeling of interfacial heat and mass transfer and micro/nano-fluidics. Dr. Mukherjee is the recipient of 2006 ASME Journal of Heat Transfer Best Paper Award.

Abstract: Boiling incipience is characterized by nucleation of vapor bubbles on a heated surface. In order to understand the physics behind the significant enhancement in heat transfer coefficient during boiling as compared to single phase convection, it is imperative to study bubble dynamics on a heated surface. It is an experimental challenge to obtain detailed information on the velocity and temperature fields near and around vapor bubbles. Development of well validated numerical models provides unique opportunity to obtain such information that eludes the experimentalists. Numerical modeling has its own challenges in modeling an infinitesimally thin liquid-vapor interface with simultaneous heat and mass transfer and widely different properties across it. Different interface capturing methods have been developed and used to model liquid vapor interfaces such as the level-set method, volume of fluid method and phase field method. In this tutorial we will discuss modeling vapor bubbles using level-set technique during nucleate pool boiling. The 3D governing equations, initial and boundary conditions as well as details of the computational domain will be presented. The discretization technique and the solution procedure based on SIMPLER algorithm will be discussed. Finally, some of the successful results obtained using this modeling approach will be illustrated.

TUTORIAL 11-4-3

THERMOFLUID CHARACTERISTICS OF HIGH VAPOR FRACTION MICROGAP FLOW IN EMBEDDED COOLING CONFIGURATIONS

California Room, Mezzanine **July 7, 4:45-6:45 PM**

Abstract: Two-phase flow in microgap channels offers highly potent thermal management capability and is the foundation for the emerging “embedded cooling” paradigm of electronic cooling. While heat transfer and pressure drop in such flows are intimately tied to distinct forms of vapor-liquid aggregation, insufficient attention has been paid to characterizing the wave patterns and sub-regimes in high-quality microgap channel flow. This tutorial will focus on the results of visualization and heat transfer studies, along with a numerical instability analysis of the liquid film, recently completed at Maryland.

These results, along with earlier foundational studies, shed considerable light on the thermofluid characteristics of high-quality two-phase flow in embedded cooling configurations. As predicted by the prevailing flow regime models, annular flow is found to be the dominant flow regime for this microgap configuration. Within the annular flow regime, however, unique 3D wave patterns are observed at the liquid-vapor interface, rather than the anticipated smooth liquid film. The wavelength of these interfacial waves is observed to decrease with increasing flow quality and mass flux. Use of a detailed numerical instability model of the shear-driven liquid-vapor interface is found to yield strong agreement in predicted wavelength and wave growth rate distribution with the experimental results. The axial variation of the wall heat transfer coefficient is found to reflect the flow regime propagation in the microgap channel and the onset of local dryout caused by instabilities in the annular liquid film.

Tutorial Lecturers:
Avram Bar-Cohen, Amir Riaz, Caleb Holloway, Department of Mechanical Engineering, University of Maryland, College Park, MD

Professor Avi Bar Cohen, Mechanical Engineering, University of Maryland, MD

Dr. Avram Bar-Cohen is an internationally recognized leader in thermal science and technology, an honorary member of ASME, and Fellow of IEEE, as well as Distinguished University Professor in the Department of Mechanical Engineering at the University of Maryland. His publications, lectures, short courses, and research outcomes, as well as professional service in ASME and IEEE, have helped to create the scientific foundation for the thermal management of electronic components and systems and pioneered techniques for energy-efficient sustainable design of manufactured products. His current research focuses on on-chip thermoelectric and two-phase microchannel coolers for high heat flux electronic components, thermal control of solid-state lighting systems, and polymer-fiber composite

heat exchangers for seawater applications. He is the Editor-in-Chief of World Scientific Press' Encyclopedia of Thermal Packaging. From 2001 to 2010 he served as the Chair of Mechanical Engineering at Maryland and is currently on assignment as a Program Manager in the MTO at the Defense Advanced Projects Agency in Virginia.

Professor Amir Riaz, Mechanical Engineering, University of Maryland, MD

Dr. Amir Riaz received his Master's degree in Aerospace Engineering from the University of Southern California in 2001 and his doctorate in Mechanical Engineering from the University of California Santa Barbara in 2003. He was subsequently a physical sciences research associate at Stanford University in the department of Energy Resources Engineering. He is currently an Assistant Professor of Mechanical Engineering at the University of Maryland, with a research program focusing on numerical simulations of multiphase flows and flows in porous media, as well as carbon dioxide sequestration and enhanced oil recovery.

TUTORIAL 11-4-4

THERMAL MANAGEMENT OF LED DEVICES AND SYSTEMS

Garden Room, Lobby Level **July 7, 4:45-6:45 PM**

Abstract: By 2020 nearly half of all commercial lamps and luminaires sold will be LED-based. Among the claims associated with solid state lighting (SSL) is increased efficiency, that LEDs generate less heat than traditional sources, and yet thermal management is often cited as the "largest single" challenge for LED manufacturers and product developers. The thermal management challenge for LEDs is multidimensional, and the effectiveness of the thermal path from source to ambient and resulting LED junction temperatures dramatically impact all other aspects of product design. Thus, novel packaging and thermal management solutions will continue to pave the way for enhanced product differentiation and maximum customer value. This course will begin with an introduction to solid state lighting and the transformation currently taking place within the lighting industry. Thermal management challenges and opportunities for LED-based systems will be introduced in the context of LED packaging and product trends. The first main section of the course will focus on optical, electrical, and thermal performance characteristics of individual devices and arrays of LEDs. The dependence of various LED performance parameters on drive current and operating temperature will be explored in detail, including a discussion of how LED manufacturers characterize and communicate these characteristics. The second main section of the course will cover thermal management approaches and technologies from a product system view. Since thermal management is fundamentally a balance between heat dissipation and operating temperature, a significant amount of time will be devoted to sources of heat generation and inefficiencies in LED systems and the impact of operating temperature on system reliability. The balance of this section will comprise a review of state-of-the-art LED cooling technology trends and practices. The course will conclude with a discussion of the role of system modeling and its benefits throughout the product life cycle. Example system-level design trade-offs and opportunities to optimize for cost, performance, and aesthetics will be presented. Industry trends toward standardization of mechanical, photometric, electrical, thermal, and control interfaces will be covered. Finally, key concepts and learnings from the course will be highlighted and summarized.

Course Outline

1. Background and Motivation

2. LED Performance Characterization

3. Thermal Management Impact and Options: a.Sources of Heat Generation, b.System Reliability, c.Cooling Technologies

4. Opportunities and Summary

Who should attend? This course is designed for product developers, research staff, and project managers who seek a better understanding of the aims of thermal management and how temperature impacts LED device and system design, performance, and reliability.

Developers of advanced thermal management technology would also greatly benefit from this course.

Karl Geisler, Ph.D., Advanced Product Development Specialist, 3M

Karl J.L. Geisler, Ph.D., is currently Advanced Product Development Specialist in 3M's Electronics & Energy Business Group Laboratory, working on product platform development for advanced LED lighting architectures. Prior to joining 3M in the fall of 2010, he spent 8 years in product development, thermal packaging, and thermomechanical reliability of terrestrial, airborne, and space electronics at General Dynamics Advanced Information Systems. Dr. Geisler has authored or co-authored 6 book chapters and over 20 journal and conference papers related to thermal management and electronic system design. In addition, he co-authored (with Dr. Avram Bar-Cohen) Dielectric Liquid Cooling of Immersed Components, Vol. 3 of the Encyclopedia of Thermal Packaging and is co-editor of the book Cooling of Microelectronic and Nanoelectronic Equipment: Advances and Emerging Research. He holds 5 U.S. patents with many more pending. Dr. Geisler received the Ph.D. and M.S. degrees in Mechanical Engineering from the University of Minnesota, Twin Cities and a B.A. in Physics from Lawrence University of Appleton, Wisconsin. He is a member of ASME and the IEEE Components, Packaging and Manufacturing Technology (CPMT) Society. Dr. Geisler has served as an adjunct professor at the University of Minnesota.

Forum on the Journal of Electronic Packaging (JEP Forum)

French Room **6:15 to 7:45 p.m., Tuesday, July 7**

(Refreshments and snacks will be provided)

Organizers:

Sandeep Tonapi, Anveshak Technology and Knowledge Solutions

Y. C. Lee, University of Colorado Boulder

The ASME Journal of Electronic Packaging is going through a transition period for the enhancement of journal's impact. The review process will be timely, fair, and effective in order to publish high quality articles with impact that may be appreciated in two years or in ten or twenty years after publication. The journal will also publish review articles to cover hot, emerging, and fundamental topics. These review articles will enhance service to our regular readers and reach out to many other prospective readers. Electronic packaging is essential for a wide spectrum of applications represented by smartphones/tablets/wearable electronics, computers, data centers, wireless/photonic communication, sensors/actuators, biomedical devices, energy systems, and military systems. This forum is to demonstrate JEP's potential impact through three invited presentations by speakers closely related to JEP, followed by a discussion on how to enhance the journal and establish a JEP community.

Agenda:

- 6:15 to 6:25pm:
  Introduction to ASME Journal of Electronic Packaging, Y. C. Lee, University of Colorado Boulder, USA.
- 6:25 to 6:45pm:
  Japanese research activities for electronic packaging by JSME and related societies, Toru Ikeda, Kagoshima University, Japan.
- 6:45 to 7:05pm:
  Virtual international research institute on two-phase flow and heat transfer, John R. Thome, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.
- 7:05 to 7:25pm:
  Avram Bar-Cohen, DARPA Thermal Management Technology Program, Defense Advanced Research Projects Agency, USA.
- 7:25 to 7:45pm:
  General discussion on the future of Journal of Electronic Packaging

MONDAY, JULY 6

1:00-2:00 | 3:00-4:00 | 4:00-5:00 | 5:30-6:30 | 6:30-7:30 | 7:30 | 8:30 | 9:30

Registration 7:00am - 6:00pm

InterPACK/ICNMM Exhibits

Tutorials 11-4-1

Tutorials 11-4-2

11-4-1

11-4-2

InterPACK/ICNMM Reception

IMECE 2016 Meeting

ITherm 2016 Meeting

3:30-5:00

2-5-1

4-10-1

1-3-1

6-2-7

8-3-1

10-1-11

30 Minute Coffee Break

5:30-7:00

2-5-2

4-10-2

1-3-2

6-1-5

5-6-1

10-1-10

ASME JEP Open Meeting 7:00-8:00pm

TUESDAY, JULY 7

7:00-7:45am Authors Breakfast

7:45-9:15	9:30-11:00	11:00-1:00	1:00-2:30	2:45-4:15	4:45-6:15	6:15	7:45	9:30
3-1-1	2-7-4	Keynotes Luncheon Professor Arun Majumdar Stanford University	3-1-2	3-1-3	3-1-4			
14-1-1	14-2-1		14-2-2	14-2-1	14-3-2			
5-7-1	5-8-1		5-9-1	5-2-1	5-9-2			
4-4-2	4-4-3		4-4-4	4-5-1	Women Career Panel	Career Workshop		
4-1-6	4-1-7		4-11-1	4-6-1				
6-2-6	6-6-1		6-6-2	3-2-1	11-1-3 (2 hrs)	ICNMM 2016 Planning Meeting		
6-3-1	6-3-2		6-3-3	2-5-3	11-1-4 (2 hrs)			
7-1-1	7-1-2		4-8-4	7-5-1	7-5-2	JEP Workshop		
8-2-1	8-2-2		8-2-3					
9-1-1			9-1-5	09-1-2	10-1-8			
	10-1-3			10-1-5	10-1-1 (2 hrs)			

15 Minute Coffee Break

30 Minute Coffee Break

InterPACK/ICNMM Dinner by Invitation

InterPACK/ICNMM Exhibits

InterPACK/ICNMM Exhibits

Registration 7:00am - 6:00pm

InterPACK Advisory Board Meeting (Closed)

WEDNESDAY, JULY 8

7:00-7:45am Authors Breakfast

7:45-9:15	9:30-11:00	11:00-1:00	1:00-2:30	2:45-4:15	4:45-6:15	6:15	8:00	9:00
3-3-1	1-2-2	Luncheon InterPACK Achievement Award (talk) & ICNMM Award	3-4-1	3-4-2	14-5-1			
5-1-1	5-3-1		5-4-1	5-5-1	5-2-2	POSTER SESSION		
6-2-1	6-2-2		6-2-3	6-2-4	6-2-5	Pizza Bar		
4-2-1	4-2-2			4-1-1	4-1-2			
6-4-1	6-4-2		6-4-3	4-9-1	4-9-2			
6-7-1	6-7-2		6-7-3	3-3-2	3-4-3			
2-1-1	2-1-2		2-1-3	2-3-1	2-3-2			
	2-4-1		2-4-2	2-4-3	2-2-1			
1-2-1	1-6-4		1-6-1	6-1-4	6-5-4			
10-1-2			10-1-4					
	9-1-3			09-1-4	09-1-6			

15 Minute Coffee Break

30 Minute Coffee Break

InterPACK/ICNMM Exhibits

InterPACK/ICNMM Exhibits

Registration 7:00am - 6:00pm

EPPD Executive Committee Meeting (closed) 7:45am - 8:45am

THURSDAY, JULY 9

7:00-7:45am Authors Breakfast

7:45-9:15	9:30-11:00	11:00-1:00	1:00-2:30	3:00-4:30
6-1-1	6-1-2	Joint Lunch Paper and Poster Awards	6-1-3	InterPACK / ICNMM Wrap-up and Future Planning Meeting (Open)
6-5-1			6-5-3	
4-1-3	4-3-1		1-1-3	
1-1-1	2-7-1		1-4-1	
1-1-2			1-5-1	
1-6-3			4-3-2	
8-1-1	8-1-2		4-1-4	
8-4-1				
2-7-2			6-5-2	
	09-1-7			
10-1-7	10-1-6		10-1-9	

InterPACK/ICNMM Exhibits

Registration 7:00am - 12:30pm

MONDAY, JULY 6, 2015

3:00pm - 7:30pm	3:30pm - 5:00pm	5:30pm - 7:00pm
11-4-1 Tutorials: Reliability Challenges In Microelectronics Packaging Garden Room	**Session 1-3-1** Reliability Experiment and Simulation of Advanced Interconnects Green Room	**Session 1-3-2** Materials Characterization and Modeling in Advanced Interconnect Technologies Green Room
11-4-2 Tutorials: Two Phase Boiling Computational Modelling Challenges California Room	**Session 2-5-1** Thermal Transport in Silicon Nanostructures Empire Room	**Session 2-5-2** Interfacial Thermal Transport Empire Room
	Session 4-10-1 Air Cooling- I- Heat Sinks International Room	**Session 4-10-2** Air Cooling- II- Measurements and System Level Solutions International Room
	Session 8-3-1 Transport in Membranes Far East Room	**Session 5-6-1** Advanced and Oscillating Heat Pipes Far East Room
	Session 6-2-7 Experimental Investigation of Two Phase Flows II Hunt Room	**Session 6-1-5** Non Equilibrium Gas Flows Hunt Room
	Session 10-1-11 Data Center- Thermal Management French Room	**Session 10-1-10** Thermal, Thermo-mechanical Challenges in Packaging of Semiconductor Lasers French Room
7:00pm - 9:00pm - Terrace Room InterPACK/ICNMM Reception		**7:00pm - 9:00pm** Exhibits Open

TUESDAY, JULY 7, 2015

7:45am - 9:15am	9:30am - 11:00am	1:00pm - 2:30pm	2:45pm - 4:15pm	4:45pm- 6:15pm
Session 3-1-1 N/MEMS Sensors & Actuators (Part I) French Room	**Session 2-7-4** Low Dimensional Materials Characterization & Applications Pavilion Room	**Session 3-1-2** N/MEMS Sensors & Actuators (Part I) French Room	**Session 3-1-3** Advances in MEMS Resonators and Resonator Modeling Green Room	**Session 3-1-4** RF MEMS Hunt Room
Session 4-1-6 Data Center Modeling and Experiments Garden Room	**Session 4-1-7** Data Center Design Garden Room	**Session 4-8-4** Phase Change Materials California Room	**Session 2-5-3** Heat Transfer and Thermal Measurements of Nanosystems Empire Room	**Session 9-1-8** Women in Technology PANEL Pavilion Room
Session 4-4-2 Device- Level California Room	**Session 4-4-3** Liquid Cooling California Room	**Session 4-4-4** Heat Spreading Green Room	**Session 3-2-1** Energy Harvesting Systems, Batteries & Supercapacitors Hunt Room	**Session 10-1-1** Low Dimensional Materials Characterization and Application Technology Update Talks French Room
Session 5-7-1 High Heat Flux Hot Spot Cooling International Room	**Session 5-8-1** Embedded Cooling for 3D ICs International Room	**Session 4-11-1** Power-Performance-Reliability Co-design for ICs Garden Room	**Session 4-5-1** Thermal Management of Stacked Die and Packages California Room	**Session 10-1-8** Microfluidic Enabling Technology for Material Synthesis and Cell Assays Empire Room
Session 6-2-6 Two Phase Flow Microfluidics Hunt Room	**Session 6-6-1** Thin Film Transport Phenomena Hunt Room	**Session 5-9-1** Two Phase Boiling Computational Modeling Challenges-1 International Room	**Session 4-6-1** Thermoelectrics Garden Room	**Session 5-9-2** Two Phase Boiling Computational Modeling Challenges-2 International Room
Session 6-3-1 Continuum/Atomistic Modeling and Simulations 1 Empire Room	**Session 6-3-2** Continuum/Atomistic Modeling and Simulations 2 Empire Room	**Session 6-3-3** Continuum/Atomistic Modeling and Simulations 3 Empire Room	**Session 5-2-1** Flow-boiling Experimental Investigations International Room	**Session 11-4-3** Tutorials: Thermofluid Characteristics of High Vapor Fraction Microgap Flow in Embedded Cooling Configurations California Room 4:45pm- 6:45pm (2 hours)
Session 7-1-1 Novel Fabrication Methods-1 Green Room	**Session 7-1-2** Novel Fabrication Methods-2 Green Room	**Session 6-6-2** Droplet Dynamics Hunt Room	**Session 7-5-1** Micro/Nano-scale 3D Printing Technologies Far East Room	**Session 7-5-2** Additive Manufacturing for Thermal Applications Far East Room

7:45am - 9:15am	9:30am - 11:00am	1:00pm - 2:30pm	2:45pm - 4:15pm	4:45pm- 6:15pm
Session 8-2-1 Biomicro I Far East Room	**Session 8-2-2** Biomicro II Far East Room	**Session 8-2-3** Biomicro II Far East Room	**Session 9-1-2** Mobile Thermal Management PANEL Pavilion Room	**Session 11-4-4** Tutorial: Thermal Management of LED Devices and Systems Garden Room
Session 9-1-1 Two Phase Boiling Computational Modeling Challenges PANEL Pavilion Room	**Session 10-1-3** Scalable and Integrated Nanotechnology French Room	**Session 9-1-5** The Role of Additive Manufacturing on Next Generation Thermal Management Systems PANEL Pavilion Room	**Session 10-1-5** Tech Talk on Energy, Health and Water-Applications of Nano-, Micro-, and Mini-Scale French Room	**4:45pm- 6:45pm** **Session 14-3-2** Thermal Interface Materials and Adhesives Diplomat Room
Session 14-1-1 Water Dicing, Organic Substrates and Glass Interposers Diplomat Room	**Session 14-2-1** Interconnect Solder Material Properties I Diplomat Room	**Session 14-2-2** Interconnect Solder Material Properties II Diplomat Room	**Session 14-3-1** Underfills and CTE Effects Diplomat Room	
7:00am - 7:45am Authors Breakfast (for authors presenting in Tuesday's Sessions) Vanderbilt Room	**7:00pm - 9:30pm** Crown Room (by invitation) InterPACK/ICNMM Dinner (Cash Bar will begin at 6:30pm) **6:15pm - 7:45pm** JEP Workshop French Room **6:15 pm- 7:45pm** Career Workshop Pavillion Room **11:00am - 1:00pm** Keynote Grand Ballroom			

WEDNESDAY, JULY 8, 2015

7:45am - 9:15am	9:30am - 11:00am	1:00pm - 2:30pm	2:45pm - 4:15pm	4:45pm- 6:15pm
Session 1-2-1 TSVs in 2.5D and 3D Packaging Far East Room	**Session 1-2-2** Packaging Challenges in 2.5D/3D and Stacked Packaging Far East Room	**Session 1-6-1** Temperature, Moisture and Harsh Chemicals Far East Room	**Session 2-3-1** Advanced Thermal Management and Metrology I Green` Room	**Session 2-2-1** Thermal Management of LEDs Garden Room
Session 2-1-1 Advanced Modeling Solutions for Mobile Thermal Management Green Room	**Session 1-6-4** Temperature Cycling and Aging Diplomat Room	**Session 5-4-1** Liquid and Synthetic Jets California Room	**Session 3-3-2** Failure Mechanisms, Reliability & Testing Methods Far East Room	**Session 2-3-2** Advanced Thermal Management and Metrology II Green Room
Session 3-3-1 Advanced Fabrication, Packaging, & Assembly Technology Diplomat Room	**Session 2-1-2** Advanced Technologies for Mobile Thermal Management Green Room	**Session 2-1-3** Thermal Management of Mobile and Opto-electronic Devices Green Room	**Session 3-4-2** Biosensors & Systems, Biomedicine, & Mircofluidics Diplomat Room	**Session 3-4-3** Wearables, Flexible Systems, & Microrobotics Diplomat Room
Session 4-2-1 Air Cooling Approaches and Components Garden Room	**Session 4-2-2** Hybrid & Liquid Cooling Approaches and Components Garden Room	**Session 2-4-2** Advances in Packaging, Characterization and Liquid Cooling Garden Room	**Session 4-1-1** Data Center Control and Optimization French Room	**Session 4-1-2** Data Center Transient Modeling and Measurements French Room
Session 5-1-1 Single Phase Cooling Fundamentals California Room	**Session 5-3-1** Cold Plate Integration California Room	**Session 3-4-1** Carbon/graphene, Atomic Layer & 2D Semiconductor Based Systems Diplomat Room	**Session 2-4-3** Advances in Liquid and Two-Phase Cooling Techniques and Characterization Garden Room	**Session 5-2-2** Pool and Flow-Boiling California Room
Session 6-2-1 Two Phase Flow in Microchannels and Minichannels International Room	**Session 6-2-2** Flow Visualization of Two Phase Flows International Room	**Session 6-2-3** Numerical Investigation of Two Phase Flows- I International Room	**Session 4-9-1** Multiphysics and Multiscale Modeling for Thermal Management of Electronics Empire Room	**Session 4-9-2** Thermal Modeling and Optimization Techniques Empire Room
Session 6-4-1 Condensation Hunt Room	**Session 6-4-2** Pool Boiling: Contact Line and Bubble Dynamics Hunt Room	**Session 6-4-3** Pool Boiling: Heat Transfer Enhancement Hunt Room	**Session 5-5-1** Vapor Chambers & Condensation California Room	**Session 6-5-4** Two-Phase Flows Hunt Room
Session 6-7-1 Advances in Electrokinetics and Electrophoresis Empire Room	**Session 6-7-2** Fundamentals of Electrokinetic Flow Empire Room	**Session 6-7-3** Electrokinetics and Electrohydrodynamics Empire Room	**Session 6-1-4** Heat Transfer in Single Phase Flows Hunt Room	**Session 14-5-1** Novel Modeling: Test and Characterization Methods Far East Room

7:45am - 9:15am	9:30am - 11:00am	1:00pm - 2:30pm	2:45pm - 4:15pm	4:45pm- 6:15pm
Session 10-1-2 Power Electronics and Electric Machines French Room	**Session 2-4-1** Advances in Packaging and Characterization French Room	**Session 10-1-4** High Temperature & Harsh Environment Electronic Devices and Packaging French Room	**Session 6-2-4** Numerical Investigation of Two Phase Flows- II International Room	**Session 6-2-5** Experimental Investigation of Two Phase Flows International Room
	Session 9-1-3 Future Outlook of M/NEMS Technologies in Wearables and the Internet of Things (IoT) PANEL Pavilion Room		**Session 9-1-4** Impact of Microfluidics and Lab-on-a-Chip on Bio: Challenges and Opportunities PANEL Pavilion Room	**Session 9-1-6** Embedded Cooling-IceCool Apps PANEL Pavilion Room
7:00am - 7:45am Authors Breakfast (for authors presenting in Tuesday's Sessions) Vanderbilt Room	**11:00am - 1:00pm** InterPACK Achievement Award (Talk) & ICNMM Award Grand Ballroom			**6:15pm - 9:00pm** Poster Session Grand Ballroom

THURSDAY, JULY 9, 2015

7:45am - 9:15am	9:30am - 11:00am	1:00pm - 2:30pm
Session 1-1-1 Packaging Interconnects International Room	**Session 2-7-1** CNT Characterization & Applications International Room	**Session 1-1-3** Packaging Reliability Green Room
Session 1-1-2 Material Characterization Hunt Room	**Session 4-3-1** Thermal Interface Materials - I California Room	**Session 1-4-1** Flexible and Wearable Electronics Far East Room
Session 1-6-3 Shock, Vibration and Other Harsh Environments Empire Room	**Session 6-1-2** Experiments in Single Phase Flows Garden Room	**Session 1-5-1** Silicon Photonics and LED Empire Room
Session 2-7-2 Graphene Characterization & Applications Pavilion Room	**Session 8-1-2** Applications in Other Energy Systems Green Room	**Session 4-1-4** Data Center Economizers and Waste Heat Recovery International Room
Session 4-1-3 Data Center Liquid Cooling Implementation and Performance California Room		**Session 4-3-2** Thermal Interface Materials - II California Room
Session 6-1-1 Numerical Modeling of Single Phase Flows Garden Room	**Session 9-1-7** Is Die-package Co-design the Key for Cost-effective Multi-die ICs? PANEL Pavilion Room	**Session 6-1-3** Single Phase Flows and System Design Garden Room
Session 6-5-1 Evaporation Diplomat Room	**Session 10-1-6** Tuning Transport Phenomena Through Nanoscale Interfacial Engineering French Room	**Session 6-5-2** Boiling and Condensation Hunt Room
Session 8-1-1 Applications in Fuel Cells, Battery and Water Systems Green Room		**Session 6-5-3** Films, Droplets, and Particles Diplomat Room
Session 8-4-1 Mixing, MT + CR I Far East Room		**Session 10-1-9** Thermal Challenges in Recent Advancements in GaN Electronics French Room
Session 10-1-7 Mechanistic Considerations and Enhancement Techniques for Flow Boiling Heat Transfer in the Microscale French Room		

7:00am - 7:45am Authors Breakfast (for authors presenting in Thursday's Sessions) – Vanderbilt Room

11:00am - 1:00pm Joint Lunch Paper and Poster Awards – Grand Ballroom

Monday, July, 06

EMERGING TECHNOLOGY FRONTIERS

2-5
NANOSCALE HEAT TRANSPORT AND CHARACTERIZATION METHODS

2-5-1
Thermal Transport in Silicon Nanostructures

Lobby Level, Empire Room 3:00pm - 5:00pm

Session Organizer: Patrick Hopkins, University of Virginia, Charlottesville, VA, United States

Session Co-Organizer: Ashutosh Giri, University of Virginia, Charlottesville, VA, United States

Ballistic Phonon Transport in Holey Silicon

InterPACK Technical Presentation: InterPACKICNMM2015-48060

Jaeho Lee, University of California, Irvine, Irvine, CA, United States, Jongwoo Lim, Peidong Yang, UC Berkeley, Berkeley, CA, United States

Mapping Thermal Spectra through Nanoscale Ballistic Transport

InterPACK Technical Presentation: InterPACKICNMM2015-48100

Yongjie Hu, University of California, Los Angeles, Los Angeles, CA, United States

Thermal Transport Property of Silicon Membranes with Asymmetric Porous Structure

ICNMM Technical Paper Publication: InterPACKICNMM2015-48281

Harutoshi Hagino, Kyushu Institute of Technology, Fukuoka, Japan, Koji Miyazaki, Kyushu Institute of Technology, Kitakyushu, Japan

An Integrated Analysis of Thermal Conductivity Measurement in Silicon Thin Films

InterPACK Technical Presentation: InterPACKICNMM2015-48573

Yuqiang Zeng, Purdue Univ., West Lafayette, IN, United States, Amy Marconnet, Purdue University, West Lafayette, Indiana, United States

In-Plane Thermal Conductivity Measurements of 20 - 340nm Silicon-On-Insulator Device Layers by Time-Domain Thermoreflectance

InterPACK Technical Presentation: InterPACKICNMM2015-48754

Joseph Feser, University of Delaware, Newark, DE, United States, David G. Cahill, University of Illinois, Urbana, IL, United States

MINI WORKSHOPS, STUDENT POSTER COMPETITION AND TUTORIALS

11-4
TUTORIALS

11-4-1
Tutorials: Reliability Challenges in Microelectronics Packaging

Lobby Level, Garden Room 3:00pm - 7:30pm

Interfaces and Failure

InterPACK Invited Presentation: InterPACKICNMM2015-48851

Ganesh Subbarayan, Purdue University, West Lafayette, IN, United States

Fatigue: Why it Poses Reliability Challenges in Electronic Systems?

InterPACK Invited Presentation: InterPACKICNMM2015-48852

Abhijit Dasgupta, CALCE/University of Maryland, College Park, MD, MD, United States

Designing in Reliability of Complex Electronic Devices: System Level Impact of Multi-physics Interaction

InterPACK Invited Presentation: InterPACKICNMM2015-48853

Krishna Darbha, Microsoft Corporation, Redmond, WA, United States

Changing Role of Mechanics in Electronic Packaging World: Opportunities & Challenges

InterPACK Invited Presentation: InterPACKICNMM2015-48854

Sandeep Sane, Intel Corp, Chandler, AZ, United States

11-4-2
Tutorials: Two Phase Boiling Computational Modelling Challenges

Mezzanine Level, California Room 3:00pm - 7:30pm

CFD simulation of two-phase flows with Eulerian technique

InterPACK Invited Presentation: InterPACKICNMM2015-48855

Mirco Magnini, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Implicit Interface Capturing Strategies in Simulation Efforts

InterPACK Invited Presentation: InterPACKICNMM2015-48856

Mario F Trujillo, University of Wisconsin, Madison, WI, United States

Moving Mesh-Moving Boundary Method for Two-Phase Flows with Phase Change

InterPACK Invited Presentation: InterPACKICNMM2015-48857

Gustavo Anjos, State University of Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brazil

Numerical Modeling of Vapor Bubbles during Nucleate Boiling

InterPACK Invited Presentation: InterPACKICNMM2015-48858

Abhijit Mukherjee, California State University Northridge, Northridge, CA, United States

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-3
Advances in Interconnect Technologies

1-3-1
Reliability Experiment and Simulation of Advanced Inteconnects

Lobby Level, Green Room 3:30pm - 5:00pm

Session Organizer: Xiao Hu Liu, IBM TJ Watson Research Center, Yorktown Heights, NY, United States

Session Co-Organizer: Dhruv Bhate, Intel Corporation, Chandler, AZ, United States

Diffcode a System for the Simulation of Diffusion Driven Phase Evolution in Solids

InterPACK Technical Paper Publication: InterPACKICNMM2015-48655

Subramanya Sadasiva, Intel, Hillsboro, OR, United States, Ganesh Subbarayan, Purdue University, West Lafayette, IN, United States

Numerical Analysis of Allowable Current Density for Electromigration of Interconnect Tree Structure with Reservoir

InterPACK Technical Paper Publication: InterPACKICNMM2015-48744

Kazuhiro Fujisaki, Hikaru Narita, Kazuhiko Sasagawa, Hirosaki university, Hirosaki, Japan

Damage Observation of CNT Networked Structure under High Current Density

InterPACK Technical Presentation: InterPACKICNMM2015-48746

Kazuhiro Fujisaki, Kazuhiko Sasagawa, Daiki Narita, Hirosaki University, Hirosaki, Japan

Reliability of Interconnections Made of Sintered Silver Nano Particles

InterPACK Technical Paper Publication: InterPACKICNMM2015-48795

Przemyslaw K. Matkowski, Wroclaw University of Technology, Wroclaw, DOL, Poland, Tomasz Falat, Wroclaw University of Technology, Wrocalw, Poland, Andrzej Moscicki, Amepox Microelectronics Ltd., Lodz, Poland

Investigation of Solder Joint Intermittent Failure under Vibration Environment

InterPACK Technical Presentation: InterPACKICNMM2015-48208

Changwoon Han, Hyeonseok Oh, Korea Electronics Tech Inst, Seongnam, Korea (Republic)

THERMAL MANAGEMENT

4-10
Air Cooling: Heat Sink to System Level

4-10-1
Air Cooling - I - Heat Sinks

Mezzanine Level, International Room 3:30pm - 5:00pm

Session Organizer: Krishna Kota, New Mexico State University, Las Cruces, NM, United States

Session Co-Organizer: Sukhvinder Kang, Aavid Thermalloy, Laconia, NH, United States

A Study on Heat Sink Performance Using V-Shaped Cannelure Structure Fin

ICNMM Technical Paper Publication: InterPACKICNMM2015-48043

Po-Sheng Huang, National Chiao Tung University, Taipei, Taiwan, Chi-chuan Wang, National Chiao Tung University, Hsinchu, Taiwan

Small-Scale Vorticity Induced by a Self-Oscillating Fluttering Reed for Heat Transfer Augmentation in Air Cooled Heat Sinks

InterPACK Technical Paper Publication: InterPACKICNMM2015-48511

Pablo Hidalgo, Georgia Institute of Technology, Atlanta, GA, United States, Ari Glezer, Georgia Inst. Of Technology, Atlanta, GA, United States

Thermal Behaviors of Passively-Cooled Hybrid Fin Heat Sinks for Lightweight and High Performance Thermal Management

InterPACK Technical Paper Publication: InterPACKICNMM2015-48630

Nico Setiawan Effendi, Kyoung Joon Kim, Pukyong National University, Busan, Korea (Republic)

Thermal Behavior of Aluminum Alloy Metal Foam Heat Sinks: A Computational and Experimental Approach

InterPACK Technical Paper Publication: InterPACKICNMM2015-48745

Khaled Al-Athel, King Fahd University of Petroleum & Minerals (KFUPM), Dhahran, Saudi Arabia, Shahzada P. Aly, King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia, Abul Fazal M. Arif, King Fahd University of Petroleum & Minerals (KFUPM), Dhahran, Saudi Arabia, Javad Mostaghimi, Univ Of Toronto, Toronto, ON, Canada

A Miniature Double Oscillating-fan Cooling System using Electromagnetic Force

InterPACK Technical Paper Publication: InterPACKICNMM2015-48151

HsienChin Su, Dastrong electronics, Buffalo, NY, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-2
Two Phase Flows

6-2-7
Experimental Investigation of Two Phase Flows II

Mezzanine Level, Hunt Room 3:30pm - 5:00pm

Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels

ICNMM Technical Paper Publication: InterPACKICNMM2015-48143

Hideo Ide, Eiji Kinoshita, Ryo Kuroshima, Takeshi Otaka, Kagoshima University, Kagoshima, Japan, Yuichi Shibata, Ibaraki National College Tech, Hitachinaka 312-8508, Japan, Masahiro Kawaji, City College of New York, New York, NY, United States

Pressure Loss of Water Flow and Flow Boiling Heat Transfer in Microtubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48325

Takeya Okamoto, Kogakuin University, Shinjuku, Tokyo, Japan, Hiroyasu Ohtake, Kogakuin University, Tokyo, Japan, Koji Hasegawa, Kogakuin University, Shinjuku, Tokyo, Japan

Heat Transfer in Liquid-Liquid Taylor Flow in a Mini-Scale Tube with Constant Wall Temperature

ICNMM Technical Paper Publication: InterPACKICNMM2015-48272

Wesam Adrugi, Memorial University of Newfoundland, St.John's, NL, Canada, Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada, Kevin Pope, Memorial University of Newfoundland, St.John's, NL, Canada

Experimental Investigation on Flow Instability in a Single Vertical Microtube

ICNMM Technical Paper Publication: InterPACKICNMM2015-48426

Qian You, Concordia University, Montreal, QC, Canada, Ibrahim Hassan, Texas A&M University at Qatar, Doha, Qatar, Lyes Kadem, Concordia University, Montreal, QC, Canada

High Flow Rate Micro Orifice Dispersion of Gas-Liquid Flow

ICNMM Technical Paper Publication. InterPACKICNMM2015-48221

Norbert Kockmann, TU Dortmund University, Dortmund, Germany, Alexander Tollkoetter, Florian Schirmbeck, Jens Wesholowski, TU Dortmund, Dortmund, Germany

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

8-3
Transport in Membranes

8-3-1
Transport in Membranes

Mezzanine Level, Far East Room 3:30pm - 5:00pm

Session Organizer: Saeed Moghaddam, University of Florida, Gainesville, FL, United States

Session Co-Organizer: Gisuk Hwang, Wichita State University, Wichita, KS, United States

Influence of Synthesis Conditions on the Transport Properties of Graphene Oxide Laminates

ICNMM Technical Paper Publication: InterPACKICNMM2015-48222

Abhilash Paneri, Saeed Moghaddam, University of Florida, Gainesville, FL, United States

MD Evaluation of the Vibrational Spectra of DNA Bases in the Process of Transport through Graphene Nanopore

InterPACK Technical Paper Publication: InterPACKICNMM2015-48298

Takumu Kitani, Toyama University, Toyama, Toyama-ken, Japan, Tatiana Zolotoukhina, Toyama University, Toyama, Toyama-Ken, Japan

Molecular Study of TMV Nano-Pore for Biological Membrane-based Water Desalination

ICNMM Technical Presentation: InterPACKICNMM2015-48490

Nikolay Rodionov, Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Effects of Temperature and Pore Size on Water Diffusion Inside Carbon Nanotubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48725

Kuiwen Zhao, Zhenyu Liu, Huiying Wu, Shanghai Jiao Tong University, Shanghai, China

Mitigation of Biofouling Through In-Plane Application of Weak DC Current in Presence of Antimicrobials

ICNMM Technical Paper Publication: InterPACKICNMM2015-48238

Marshal Maskarenj, IIT Bombay, Mumbai, India, Ravi Chavali, York University, Toronto, ON, Canada, Ankita Mathur, University of RaJasthan, Jaipur, India, Prakash Ghosh, IIT Bombay, Mumbai, India, Sushanta Mitra, York University, Toronto, ON, Canada

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-11
Data Center - Thermal management

Lobby Level, French Room 3:30pm - 5:00pm

Session Organizer: Madhusudan Iyengar, Google, Foster City, CA, United States

Liquid (Water) Cooling Today's High Performance Computers

InterPACK Invited Presentation:InterPACKICNMM2015-48900

Michael J. Ellsworth, Jr., IBM Corporation, Poughkeepsie, NY, United States

Indirect Evaporative Air Side Economizers for Data Center Cooling

InterPACK Invited Presentation: InterPACKICNMM2015-48901

Philip LePoudre, Venmar CES - Nortek Air Solutions, Saskatoon, SK, Canada

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-3
Advances in Interconnect Technologies

1-3-2
Materials Characterization and Modeling in Advanced Interconnect Technologies

Lobby Level, Green Room 5:30pm - 7:00pm

Session Organizer: Kazuhiko Sasagawa, Hirosaki University, Hirosaki, Japan

Session Co-Organizer: Pradeep Lall, Auburn University, Auburn, AL, United States

Measurement of Temperature-Dependent Young's Modulus of Molding Compound at Elevated Temperatures

InterPACK Technical Presentation: InterPACKICNMM2015-48157

Tingge Xu, Yingjie Du, Gyu-ho Kim, Huiyang Luo, The University of Texas at Dallas, Richardson, TX, United States, Les Stark, Texas Instruments Incorporated, Dallas, TX, United States, Terry Baughn, Hongbing Lu, The University of Texas at Dallas, Richardson, TX, United States

Arcing and Spacing Requirements for High Voltage Printed Circuit Boards

InterPACK Technical Paper Publication: InterPACKICNMM2015-48180

Prabjit Singh, IBM Corp, Poughkeepsie, NY, United States

Chlorine Ion Related Corrosion in Cu-Al Wirebond Microelectronic Packages

InterPACK Technical Paper Publication: InterPACKICNMM2015-48639

Pradeep Lall, Yihua Luo, Auburn University, Auburn, AL, United States, Luu Nguyen, Texas Instruments Inc., Santa Clara, CA, United States

Modeling the Reflow Soldering Process in PCBs

InterPACK Technical Paper Publication: InterPACKICNMM2015-48720

Joao Costa, Delfim Soares, Senhorinha Teixeira, University of Minho, Guimaraes, Portugal, Fatima Cerqueira, Francisco Macedo, University of Minho, Braga, Portugal, Nelson Rodrigues, University of Minho, Guimaraes, Portugal, Luis Ribas, Bosch Car Multimedia SA, Braga, Portugal, Jose Carlos Teixeira, University of Minho, Guimaraes, Portugal

Characterization of the Solder Bump Creep Using Nanoindentation

InterPACK Technical Presentation: InterPACKICNMM2015-48172

Yingjie Du, Huiyang Luo, The University of Texas at Dallas, Richardson, TX, United States, Xiao Hu Liu, IBM TJ Watson Research Center, Yorktown Heights, NY, United States, Thomas Wassick, IBM, Hopewell Junction, NY, United States, Hongbing Lu, The University of Texas at Dallas, Richardson, TX, United States

A Study on Strain Concentration around V Notch in Lead Free Solder Material and the Low Cycle Fatigue Life

InterPACK Technical Paper Publication: InterPACKICNMM2015-48136

Takashi Kawakami, Toyama Prefectural University, Imizu, Japan, Takahiro Kinoshita, Toyama Prefectural University, Toyama, Japan, Japan, Hirokazu Oriyama, Toyama Prefectural University, Imizu, Japan

EMERGING TECHNOLOGY FRONTIERS

2-5
Nanoscale Heat Transport and Characterization Methods

2-5-2
Interfacial thermal transport

Lobby Level, Empire Room 5:30pm - 7:00pm

Session Organizer: Junichiro Shiomi, University of Tokyo, Tokyo, Japan

Session Co-Organizer: Patrick Hopkins, University of Virginia, Charlottesville, VA, United States

Thermal Conductivity Measurements of Nanoscale Embedded Metallic Thin Films

InterPACK Technical Presentation: InterPACKICNMM2015-48615

Banafsheh Barabadi, MIT, Cambridge, MA, United States, Satish Kumar, Georgia Institute of Technology, Atlanta, GA, United States, Yogendra Joshi, Georgia Institute of Technology, Atlanta, GA, United States

Phonon Transmission and Thermal Boundary Conductance at Graphene and Hexagonal Boron Nitride Interface

InterPACK Technical Presentation: InterPACKICNMM2015-48231

Zhequan Yan, Liang Chen, Georgia Institute of Technology, Atlanta, GA, United States, Mina Yoon, Oak Ridge National Laboratory, Oak Ridge, TN, United States, Satish Kumar, Georgia Institute of Technology, Atlanta, GA, United States

Diamond/Metal Thermal Boundary Conductance and its Impact on Potential Packaging Materials

InterPACK Technical Presentation: InterPACKICNMM2015-48829

Christian Monachon, UC Berkeley, Berkeley, CA, United States, Ludger Weber, Ecole Polytechnique Fédérale Lausanne, Lausanne, Switzerland

Mechanisms of Nonequilibrium Electron-phonon Coupling and Thermal Conductance at Interfaces

InterPACK Technical Presentation: InterPACKICNMM2015-48342

Ashutosh Giri, John T. Gaskins, Brian Donovan, Chester Szwejkowski, University of Virginia, Charlottesville, VA, United States, Ronald Warzoha, United States Naval Academy, Annapolis, MD, United States, Mark A. Rodriguez, Jon Ihlefeld, Sandia National Laboratories, Albuquerque, NM, United States, Patrick Hopkins, University of Virginia, Charlottesville, VA, United States

Mitigation of Thermal Resistance in High Power Devices

InterPACK Technical Presentation: InterPACKICNMM2015-48773

John T. Gaskins, Yang Shen, Brian Foley, Xiaojun Xie, Joe C. Campbell, Patrick Hopkins, University of Virginia, Charlottesville, VA, United States

THERMAL MANAGEMENT

4-10
Air Cooling: Heat Sink to System Level

4-10-2
Air Cooling - II - Measurements and System Level Solutions

Mezzanine Level, International Room 5:30pm - 7:00pm

Session Organizer: Ehsan Haghighi, Dantherm, Söderköping, Sweden

Session Co-Organizer: Krishna Kota, New Mexico State University, Las Cruces, NM, United States

A Study on the Thermo-Fluid Simulation Model Using Porous Media in the Power Conversion System

InterPACK Technical Paper Publication: InterPACKICNMM2015-48085

Chang-Woo Han, You-Lim Moon, Seung-Boong Jeong, Jong-Hee Han, Hyosung Corporation, Anyang, Gyunggi, Korea (Republic)

Orientation Effects on Thermal Performance of Radial Heat Sinks Subject to Natural Convection

InterPACK Technical Paper Publication: InterPACKICNMM2015-48191

Bin Li, Yeungnam University, Gyeongsan, Korea (Republic), Chan Byon, Yeungnam University, Gyengson, Korea (Republic)

Temperature Depression under Heat Sources With Cylindrical Contact Thermocouples

InterPACK Technical Paper Publication. InterPACKICNMM2015-48641

Kayvan Abbasi, Sukhvinder Kang, Aavid Thermalloy, Laconia, NH, United States

Unsteady Heat Flux Measurements in Agitated Channel Flows

InterPACK Technical Paper Publication: InterPACKICNMM2015-48753

Smita Agrawal, University of Minnesota, Minneapolis, MN, United States, Mark North, Thermacore Inc, Lancaster, PA, United States, Terrence Simon, University of Minnesota, Minneapolis, MN, United States, Tianhong Cui, University of Minnesota, Minneapolis, MN, United States

Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules

InterPACK Technical Paper Publication: InterPACKICNMM2015-48671

Ehsan Haghighi, Dantherm, Söderköping, Sweden, Thanh L. Phan, Fujikura Ltd, Tokyo, Japan, Vijit Wuttijumnong, Fujikura America Inc., Santa Clara, CA, United States, Koichi Mashiko, Fujikura Ltd., Tokyo, Japan, Yuji Saito, Fujikura LTD, Fujikura, Japan, Masataka Mochizuki, Fujikura Ltd., Tokyo, Japan

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-6
Advanced and Oscillating Heat Pipes

5-6-1
Advanced and Oscillating Heat Pipes

Mezzanine Level, Far East Room 5:30pm - 7:00pm

Session Organizer: Vaibhav Bahadur, University of Texas at Austin, Austin, TX, United States

Session Co-Organizer: Tannaz Harirchian, Intel Corporation, chandler, AZ, United States

Start Up and Transient Behavior of an Oscillating Heat Pipe

ICNMM Technical Paper Publication: InterPACKICNMM2015-48438

Sagar B. Paudel, Gregory Michna, South Dakota State University, Brookings, SD, United States

Geometric Evaporator Enhancements of an Oscillating Heat Pipe

ICNMM Technical Paper Publicatio:. InterPACKICNMM2015-48440

Mitchell P. Hoesing, Gregory Michna, South Dakota State University, Brookings, SD, United States

Heat Transfer Characteristics of Self-rewetting Fluid and its Application in Heat Pipe

InterPACK Technical Paper Publication: InterPACKICNMM2015-48665

Shuangfeng Wang, Yanxin Hu, You Zhou, South China University of Technology, Guangzhou, Guangzhou, China, Winston Zhang, Novark Technology Inc, Shenzen, Guangdong, China

Fluid Flow and Heat Transfer in Polygonal Micro Heat Pipes

ICNMM Technical Presentation: InterPACKICNMM2015-48268

Sai Sashankh Rao, Harris Wong, Louisiana State University, Baton Rouge, LA, United States

Evaporation and Liquid-vapor Interface Dynamics in an Ultra-thin MEMS Loop Heat Pipe

ICNMM Technical Presentation: InterPACKICNMM2015-48546

Navdeep Singh Dhillon, Kripa K. Varanasi, MIT, Cambridge, MA, United States, Albert P. Pisano, University of California, San Diego, La Jolla, CA, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-1
Single Phase Flows

6-1-5
Non Equilibrium Gas Flows

Mezzanine Level, Hunt Room 5:30pm - 7:00pm

Session Organizer: Krishna Kota, New Mexico State University, Las Cruces, NM, United States

Session Co-Organizer: Heinz Herwig, Technical University Hamburg-Harburg (M-21), Hamburg, Germany

Simulation of Heat Transfer across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-model and DSMC Methods Results

ICNMM Technical Paper Publication: InterPACKICNMM2015-48034

Dilesh Maharjan, Mustafa Hadj-Nacer, University of Nevada, Reno, Reno, NV, United States, Minh-Tuan Ho, Aix-Marseille University, Marseille, France, Stefan Stefanov, Bulgarian Academy of Science, Sofia, Bulgaria, Irina Graur, Aix-Marseille University, Marseille, France, Miles Greiner, University of Nevada, Reno, Reno, NV, United States

Mass Flow Rate Measurements through Metallic Microtubes in the Slip and Transition Regimes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48054

Ernane Silva, Federal University of Santa Catarina, Florianopolis, SC, Brazil, Marcos Rojas-Cardenas, INSA Toulouse, Toulouse, France, Cesar J. Deschamps, Federal University of Santa Catarina, Florianopolis, SC, Brazil

Conjugate Heat Transfer Simulation in Gaseous Flow Micro Heat Exchanger

ICNMM Technical Paper Publication: InterPACKICNMM2015-48128

Giulio Croce, University Di Udine, Udine, Italy, Michele A. Coppola, University of Udine, Udine, Italy

Molecular Free Paths of Argon Gas in Nano-Scale Channels

ICNMM Technical Presentation: InterPACKICNMM2015-48291

Murat Barisik, Izmir Institute of Technology, Izmir, Turkey, Ali Beskok, Southern Methodist University, Chesapeake, VA, United States

Compact Slip Flow Models for Gas Flows in Rectangular, Trapezoidal and Hexagonal Microchannels

ICNMM Technical Presentation: InterPACKICNMM2015-48484

Michael Yovanovich, Waqar A. Khan, University of Waterloo, Waterloo, ON, Canada

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-10
Thermal, Thermo-mechanical Challenges in Packaging of Semiconductor Lasers

Lobby Level, French Room 5:30pm - 7:00pm

Session Organizer: Satish Chaparala, Corning Incorporated, Painted Post, NY, United States

Session Co-Organizer: Mani Prakash, Intel Corp, Dupont, WA, United States

Applications and Thermal Challenges for Quantum Cascade Lasers

InterPACK Technical Presentation: InterPACKICNMM2015-48705

Manijeh Razeghi, Northwestern University, Evanston, IL, United States

Nanofabricated Diamond Substrates for High Heat Flux Devices

InterPACK Invited Presentation: InterPACKICNMM2015-48902

Avram Bar-Cohen, University Oo Maryland At College Park, College Park, MD, United States

Tuesday, July, 07

MEMS AND NEMS

3-1
N/MEMS: Sensors, Actuators, & Resonators

3-1-1
N/MEMS Sensors & Actuators (Part I)

Lobby Level, French Room 7:45am - 9:15am

Session Organizer: Cristian Cassella, Carnegie Mellon University, Pittsburgh, PA, United States

Session Co-Organizer: Debbie G. Senesky, Stanford University, Stanford, CA, United States

Investigation of Liquid Metal Ohmic Contacts for Graphene Photonic Devices

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48567

Richard Ordonez, Noah Acosta, Jordan Melcher, University of Hawaii at Manoa, Honolulu, HI, United States, Nackieb Kamin, Space and Naval Warfare Systems Center Pacific, Pearl City, HI, United States, David Garmire, University of Hawaii, Honolulu, HI, United States

MoS2 Transistors Integrated with Microfluidic Structures for Biosensing Applications

ICNMM Technical Presentation: InterPACKICNMM2015-48236

Xiaogan Liang, Hongsuk Nam, Bo-Ram Oh, Pengyu Chen, Katsuo Kurabayashi, University of Michigan, Ann Arbor, MI, United States

Aluminum Nitride Nano-Plate Resonators for High Performance Infrared Sensing

InterPACK Technical Presentation: InterPACKICNMM2015-48465

Yu Hui, Zhenyun Qian, Matteo Rinaldi, Northeastern University, Boston, MA, United States

High-Temperature Characterization of AlGaN/GaN High Electron Mobility Pressure Sensors

InterPACK Technical Presentation: InterPACKICNMM2015-48521

Caitlin A. Chapin, Junhao Chen, Debbie G. Senesky, Stanford University, Stanford, CA, United States

Survivability of MEMS Accelerometer under Sequential Thermal and High-G Mechanical Shock Environments

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48790

Pradeep Lall, Amrit Abrol, Auburn University, Auburn, AL, United States, Jessica Glover, US Army AMRDEC, Auburn, AL, United States, Lee Simpson, US Army AMRDEC, Huntsville, AL, United States

THERMAL MANAGEMENT

4-1
Data Centers and Energy Efficient Electronic Systems

4-1-6
Data Center Modeling and Experiments

Lobby Level, Garden Room 7:45am - 9:15am

Session Organizer: Hamza Salih Erden, Syracuse University, Syracuse, NY, United States

Session Co-Organizer: Christopher Healey, Schneider Electric, Andover, MA, United States

Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48071

Tianyi Gao, James Geer, SUNY Binghamton University, Binghamton, NY, United States, Russell Tipton, Emerson Network Power, Columbus, OH, United States, Bruce Murray, Suny at Binghamton, Binghamton, NY, United States, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States, Alfonso Ortega, Villanova University, Villanova, PA, United States, Roger Schmidt, IBM Corp, Poughkeepsie, NY, United States

Development of a Library of Component Models for Thermodynamic Simulations of Data Centers

InterPACK Technical Presentation: InterPACKICNMM2015-48396

Aaron Wemhoff, Khosrow Ebrahimi, Alfonso Ortega, Villanova University, Villanova, PA, United States

Perforated Tile Airflow Prediction: A Comparison of RANS CFD, Fast Fluid Dynamics, and Potential Flow Modeling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48424

Christopher Healey, Jim VanGilder, Zachary Pardey, Schneider Electric, Andover, MA, United States

Creating a Calibrated CFD Model of a Midsize Data Center

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48448

Zachary Pardey, Jim VanGilder, Christopher Healey, Schneider Electric, Andover, MA, United States, David Plamondon, University of Massachusetts, Shrewsbury, MA, United States

4-4
Thermal Management: Device Level Thermal Management

4-4-2
Device-Level

Mezzanine Level, California Room 7:45am - 9:15am

Session Organizer: Shakti Chauhan, GE, Schenectady, NY, United States

Session Co-Organizer: Unni Vadakkanmaruveedu, Qualcomm, San Diego, CA, United States

Thermally-Optimum Design of GaN-on-SiC HEMT

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48119

Caleb Holloway, University of Maryland, College Park, MD, United States, Avram Bar-Cohen, University of Maryland At College Park, College Park, MD, United States

Thermal Diffusion Tomography for Quantitative Non-Destructive Characterization of Electronic Packages

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48333

Bahar Öner, Hakan Erturk, Bogazici University, Istanbul, Turkey

A Parametric Study of the Impact of Energy Relaxation Time on Thermal Behavior of Power Si Mosfet in Elector-Thermal Analysis

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48802

Risako Kibushi, Toyama Prefectural University, Toyama, Japan, Tomoyuki Hatakeyama, Toyama Prefectural University, Imizu, Toyama, Japan, Shinji Nakagawa, Toyama Prefectural University, Toyama, Japan, Masaru Ishizuka, Toyama Prefectural University, Toyama, Japan

Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48592

Tanya Liu, Farzad Houshmand, Stanford University, Stanford, CA, United States, Catherine Gorle, Columbia University, New York, NY, United States, Sebastian Scholl, Von Karman Institute for Fluid Dynamics, Rhode Saint Genese, Belgium, Hyoungsoon Lee, Yoonjin Won, Stanford University, Stanford, CA, United States, Hooman Kazemi, Nuvotronics LLC, Camarillo, CA, United States, Kenneth Vanhille, Nuvotronics LLC, Radford, VA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

Performance and Integration Implications of Addressing Localized Hotspots through Two Approaches: Clustering of Micro Pin-Fins and Dedicated Microgap Coolers

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48537

Craig Green, Peter Kottke, Thomas Sarvey, Andrei Fedorov, Yogendra Joshi, Muhannad Bakir, Georgia Institute of Technology, Atlanta, GA, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-7
High Heat Flux Hot Spot Cooling

5-7-1
High Heat Flux Hot Spot Cooling

Mezzanine Level, International Room **7:45am - 9:15am**

Session Organizer: Melanie Derby, Kansas State University, Manhattan, KS, United States

Session Co-Organizer: Kazuhisa Yuki, Tokyo University of Science-Yamaguchi, Sanyo-Onoda, Yamaguchi, Japan

Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48242

Sohail R. Reddy, Florida International University, Miami, FL, United States, Abas Abdoli, University of Miami, Miami, FL, United States, George S. Dulikravich, Florida International University, Miami, FL, United States, Cesar Pacheco, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, Genesis Vasquez, Rajesh Jha, Florida International University, Miami, FL, United States, Marcelo Colaco, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, Helcio Orlande, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

Embedded Two-Phase Cooling of High Flux Electronics via Micro-Enabled Surfaces and Fluid Delivery Systems (FEEDS)

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48496

Raphael Mandel, University of Maryland, College Park, MD, United States, Serguei Dessiatoun, University of Maryland, Colmar Manor, MD, United States, Patrick McCluskey, Michael Ohadi, University of Maryland, College Park, MD, United States

Microscale Layering of Liquid and Vapor Phases within Microstructures for Self-regulated Flow Delivery to Local Hot Spots

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48632

Abdy Fazeli, Sajjad Bigham, Mehdi Mortazavi, Saeed Moghaddam, University of Florida, Gainesville, FL, United States

Embedded Cooling of High Heat Flux Electronics Utilizing Distributed Microfluidic Impingement Jets

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48689

John Ditri, Joseph Hahn, Roland Cadotte, Michael McNulty, Denise Luppa, Lockheed Martin, Moorestown, NJ, United States

Reliable Integration of Microchannel Coolers for Power Electronics

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48757

David Squiller, Patrick McCluskey, Sumeer Khanna, Raphael Mandel, University of Maryland, College Park, MD, United States, Serguei Dessiatoun, University of Maryland, Colmar Manor, MD, United States, Michael Ohadi, University of Maryland, College Park, MD, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-2
Two Phase Flows

6-2-6
Two Phase Flow Microfluidics

Mezzanine Level, Hunt Room 7:45am - 9:15am

Session Organizer: Rishi Raj, IIT Patna, Patna, India

Session Co-Organizer: Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada, Masahiro Kawaji, City College of New York, New York, NY, United States

Experimental Investigation of Geometrical Parameters for Gas-Liquid Droplet Generation in Flow Focusing Configurations

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48834

Pooyan Tirandazi, Carlos Hidrovo, Northeastern University, Boston, MA, United States

Study on the Motion of Magnetic Particles Contained in a Liquid Slug in a Microtube

ICNMM Technical Paper Publication: InterPACKICNMM2015-48167

Yuichi Shibata, Ibaraki National College Tech, Hitachinaka Japan, Masahiro Kawaji, City College of New York, New York, NY, United States, Osamu Okamoto, Ibaraki National College of Technology, Hitachinaka, Japan, Hideo Ide, Kagoshima University, Kagoshima, Japan

Influence of Reynolds Number of Tube Flow on Coalescence of Droplets in a Tube Creeping Flow

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48241

Masahiro Muraoka, Yuuki Kumagai, Yuuta Yatagawa, Ichiro Ueno, Tokyo University of Science, Noda, Japan

6-3
Continuum/Atomistic Modeling and Simulations

6-3-1
Continuum/Atomistic Modeling and Simulations 1

Lobby Level, Empire Room 7:45am - 9:15am

Session Organizer: TieJun Zhang, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates

Session Co-Organizer: Leandro Sphaier, Universidade Federal Fluminense, Niteroi, RJ, RJ, Brazil

Lattice Boltzmann Simulation of Rarefied Gas Flow along Moving Rigid Objects in Microcavities

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48030

Weilin Yang, Hongxia Li, Ibrahim M. Elfadel, TieJun Zhang, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates

Heat Transfer through a Condensate Droplet

InterPACK Technical Presentation: InterPACKICNMM2015-48099

Shreyas Chavan, University of Illinois Urbana Champaign, Urbana, IL, United States, Kashif Nawaz, Johnson Controls Inc, Oklahoma City, OK, United States, Yip-Fun Yeung, University of Illinois Urbana Champaign, Urbana, IL, United States, Nenad Miljkovic, University of Illinois at Urbana-Champaign, Urbana, IL, United States

Numerical Investigation of Heat Transfer in Rough Microchannels Using a Kinetic-Continuum Hybrid Solver

ICNMM Technical Paper Publication: InterPACKICNMM2015-48126

Olga Rovenskaya, Dorodnicyn Computing Centre of Russian Academy of Sciences, Moscow, Russia, Giulio Croce, University Di Udine, Udine, Italy

Numerical Analysis of Heat Transfer Characteristics for Supercritical Aviation Kerosene

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48264

Yachao Song, Danjiao Ma, Jingzhi Zhang, Jing-xiang Chen, Songze Chen, Zhejiang University, Hangzhou, Zhejiang, China, Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China

Modeling and Simulation of Nondiffusive Heat Transfer in Semiconductors Outside of the Framework of Fourier's Law

InterPACK Technical Presentation: InterPACKICNMM2015-48411

Yanbao Ma, University of California, Merced, Merced, CA, United States

ADVANCED FABRICATION AND MANUFACTURING

7-1
Novel Fabrication Methods for Micro- and Nano- scale Devices

7-1-1
Novel Fabrication Methods- I

Lobby Level, Green Room 7:45am - 9:15am

Session Organizer: Rajiv Malhotra, Oregon State University, Corvallis, OR, United States

Session Co-Organizer: David A. Willis, SMU, Dallas, TX, United States, Paul R. Chiarot, State University of New York at Binghamton, Binghamton, NY, United States

Experimental and Analytical Study of Micro-Serrations on Surgical Blades

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48046

Marco Giovannini, Newell Moser, Kornel Ehmann, Northwestern University, Evanston, IL, United States

Development of a Protocol for Determining the Compressive Behavior of an Ultra-Thin Elastoviscoplatic Membrane used in Sealing a Microchannel Hemodialyser

ICNMM Technical Paper Publication: InterPACKICNMM2015-48366

Patrick McNeff, MIME Oregon State University, Philomath, OR, United States, Brian Paul, Oregon State University, Corvallis, OR, United States

Investigation on Singular Fields at the Vertex of Interface in Piezo Electric Material Joints and its Application

InterPACK Technical Paper Publication: InterPACKICNMM2015-48381

Tomiya Maekawa, Graduate School of Nagaoka University of Technology, Niigata, Tokyo, Japan, Hideo Koguchi, Nagaoka University of Technology, Nagaoka, Niigata Prefecture, Japan, Chonlada Luangarpa, Nagaoka University of Technology, Niigata, Niigata, Japan

Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing

ICNMM Technical Presentation: InterPACKICNMM2015-48453

Craig Zuhlke, Alfred Tsubaki, Corey Kruse, University of Nebraska-Lincoln, Lincoln, NE, United States, Troy Anderson, University of Nebraska - Lincoln, Lincoln, NE, United States, Xiaoming Wang, Hai-En Tsai, Joseph Shaw, Michael C. Downer, University of Texas at Austin, Austin, TX, United States, George Gogos, University of Nebraska - Lincoln, Lincoln, NE, United States, Sidy Ndao, University of Nebraska-Lincoln, Lincoln, NE, United States, Dennis R. Alexander, University of Nebraska - Lincoln, Lincoln, NE, United States

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

8-2
Biomicrofluidics and Lab-on-a-chip

8-2-1
Biomicro I

Mezzanine Level, Far East Room 7:45am - 9:15am

Session Organizer: Jeff Darabi, Southern Illinois University Edwardsville, Edwardsville, IL, United States

Session Co-Organizer: Michael Schrlau, Rochester Institute of Technology, Rochester, NY, United States

Coupling Isotachophoresis and Affinity Chromatography for Rapid, Specific, and Efficient Affinity Purification of DNA from Whole Human Blood

InterPACK Technical Presentation: InterPACKICNMM2015-48544

Viktor Shkolnikov, Juan Santiago, Stanford University, Stanford, CA, United States

Synthetic Asymmetric Vesicles Built Using Microfluidic Technology at High-Throughput

ICNMM Technical Paper Publication: InterPACKICNMM2015-48556

Li Lu, Jeffrey W. Schertzer, Paul R. Chiarot, State University of New York at Binghamton, Binghamton, NY, United States

A Microfluidic Device for Continuous Manetophoretic Isolation of Monocytes

ICNMM Technical Presentation: InterPACKICNMM2015-48564

Jeff Darabi, Chuan Guo, Southern Illinois University Edwardsville, Edwardsville, IL, United States

Portable Blood Typing polymer Chip Based on Solvent Uptake Microstructure Formation

ICNMM Technical Presentation: InterPACKICNMM2015-48022

Yi-Ting Huang, National Chung Hsing University, Taichung, Taiwan, Cheng-Po Wang, Chien-Fu Chen, National Chung Hsing University, Taichung City, Taiwan

Possibility and Mechanism Study of Liquid-Metal Based Micro Electroosmotic Flow Pumps for Long-Time Running Purpose

ICNMM Technical Paper Publication: InterPACKICNMM2015-48307

Meng Gao, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China, Lin Gui, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China

9-1
Panel Topics

9-1-1
Two Phase Boiling Computational Modelling Challenges

Lobby Level, Pavilion Room 7:45am - 9:15am

Session Organizer: John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

Session Co-Organizer: Kaiser Matin, System Planning Corporation, Arlington, VA, United States

Panelists:

Prof. Sumanta Acharya, University of Memphis, TN

Dr. Mirco Magnini, Laboratory of Heat and Mass Transfer, E.P.F.L., Lausanne, Switzerland

Prof. Mario Trujillo, University of Wisconsin

Prof. Michael Podowski, Department of Mechanical, Aerospace and Nuclear Engineering at RPI, and Director of Center for Multiphase Research

Prof. Amir Riaz, Mechanical Engineering, University of Maryland

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

14-1
Wafer Dicing, Organic Substrates and Glass Interposers

14-1-1
Wafer Dicing, Organic Substrates and Glass Interposers

Diplomat 7:45am - 9:15am

Session Organizer: Frank Wei, Disco Corporation, Ota-Ku, Tokyo, Japan

Session Co-Organizer: Tomoyuki Yamada, Kyocera America Inc., Fishkill, NY, United States, Tadaharu Adachi, Toyohashi University of Technology, Toyohashi, Japan

Integration of Fault Detection and Classification In Die Singulation Processes For Advanced Packaging Fabrication

InterPACK Technical Presentation: InterPACKICNMM2015-48697

Richard Beaver, Rudolph Technologies, Inc, Richardson, TX, United States, Frank Wei, Disco Corporation, Ota-Ku, Tokyo, Japan

Singulation by Plasma Etching: Integration Techniques to Enable Low Damage, High Productivity Dicing

InterPACK Technical Paper Publication: InterPACKICNMM2015-48749

Richard Barnett, David J Thomas, Oliver Ansell, SPTS Technologies Ltd, Newport, Wales, United Kingdom

Thermal Stress Analysis of Mounted Substrate Using Glass Interposer

InterPACK Technical Presentation: InterPACKICNMM2015-48686

Yuto Kubota, Gunma, Kiryu, Gunma, Japan, Ikuo Shohji, Gunma university, Kiryu, Gunma, Japan, Tetsuyuki Tsuchida, Kiyotomo Nakamura, Toppan Printing, Co., Ltd., Kitakatsushika-gun, Saitama, Japan

Advanced Build-up Materials and Processes for Packages with Fine Line and Space

InterPACK Technical Presentation: InterPACKICNMM2015-48761

Kazuhiko Tsurui, Ajinomoto Co., Inc., Kawasaki-Shi, Kanagawa, Japan, Seiichiro Ohashi, Ajinomoto North America Inc., Fort Lee, NJ, United States, Yoshio Nishimura, Ajinomoto Co., Inc., Kawasaki-Shi, Japan, Hirohisa Narahashi, Ajinomoto Fine-Techno Co., Inc., Kawasaki-Shi, Japan, Shigeo Nakamura, Ajinomoto Co., Inc., Kawasaki-Shi, Japan, Tadahiko Yokota, Ajinomoto Fine-Techno Co., Inc., Kawasaki-Shi, Japan

New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp

InterPACK Technical Paper Publication: InterPACKICNMM2015-48836

Yukio Nakamura, Kenichi Oohashi, Koji Morita, Shuji Nomoto, Takayuki Suzuki, Shin Takanezawa, Shinji Tsuchikawa, Hitachi Chemical Co., Ltd, Chikusei-shi, Japan/Ibaraki, Japan, Masaaki Takekoshi, Hitachi Chemical Co., Ltd, Tsukuba-shi, Ibaraki, Japan

EMERGING TECHNOLOGY FRONTIERS

2-7
2D Materials, Graphene & CNT Thermal Characterization & Applications

2-7-4
Low Dimensional Materials Characterization & Applications

Lobby Level, Pavilion Room 9:30am - 11:00am

Session Organizer: Yaguo Wang, University of Texas At Austin, Austin, TX, United States

Session Co-Organizer: Tengfei Luo, University of Notre Dame, Notre Dame, IN, United States

Carbon Nanotube Network Polymer Nanocomposites as Interconnect Materials in Electronics Packaging

InterPACK Invited Presentation: InterPACKICNMM2015-48693

Ajit Roy, Air Force Research Lab, Dayton, OH, United States, Cheng-gang Chen, University of Dayton Research Institute, Dayton, OH, United States, Sabyasachi Ganguli, Air Force Research Laboratory, WPAFB, OH, United States, Sergei Shenogin, University of Dayton Research Institute, Dayton, OH, United States, Jason R Foley, Air Force Research Laboratory, Munitions Directorate, Eglin AFB, FL, United States

The Contribution of the Bulk Modes on Electrical Conductivity in 3D Topological Insulators

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48213

Gulru Babac, Istanbul Technical University, Istanbul, Turkey

Error and Uncertainty in Raman Thermal Conductivity Measurements

InterPACK Technical Presentation: InterPACKICNMM2015-48474

Thomas Beechem, Sandia National Laboratories, Albuquerque, NM, United States, Luke Yates, Georgia Institute of Technology, Atlanta, GA, United States, Samuel Graham, Georgia Tech, Atlanta, GA, United States

Characterization of Carbon Nanotube Forest Interfaces Using Time Domain Thermoreflectance

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48587

Thomas Bougher, John Taphouse, Georgia Institute of Technology, Atlanta, GA, United States, Baratunde Cola, Georgia Institute of Technology, Atlanta, GA, United States

Graphene-Encapsulated Copper Nanowires for Improved Thermal Management of Interconnects

InterPACK Technical Presentation: InterPACKICNMM2015-48359

Ruchit Mehta, Sunny Chugh, Zhihong Chen, Purdue University, West Lafayette, IN, United States

THERMAL MANAGEMENT

4-1
Data Centers and Energy Efficient Electronic Systems

4-1-7
Data Center Design

Lobby Level, Garden Room 9:30am - 11:00am

Session Organizer: Jim VanGilder, Schneider Electric, Andover, MA, United States

Session Co-Organizer: Christian Lindberg, Intel, N/A, WA, United States

Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48364

Joseph Schaadt, Kamran Fouladi, Aaron Wemhoff, Joseph Pigeon, Villanova University, Villanova, PA, United States

Data Center Optimization Using Performance Metrics

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48400

Mark Seymour, Future Facilities, London, London, United Kingdom, Magnus Herrlin, Ancis Incorporated, San Francisco, CA, United States

Development of a Raised-Floor Plenum Design Tool

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48432

Jim VanGilder, Xuanhang (Simon) Zhang, Schneider Electric, Andover, MA, United States

Experimental and Numerical Characterization of A Raised Floor Data Center Using Rapid Operational Flow Curves Model

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48234

Husam Alissa, Kourosh Nemati, Binghamton University SUNY, Binghamton, NY, United States, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States, Mark Seymour, Future Facilities, London, London, United Kingdom, Ken Schneebeli, IBM, Systems and Technology Group, San Francisco, CA, United States, Roger Schmidt, IBM Corp, Poughkeepsie, NY, United States

4-4
Thermal Management: Device Level Thermal Management

4-4-3
Liquid Cooling

Mezzanine Level, California Room 9:30am - 11:00am

Session Organizer: Kazuyoshi Fushinobu, Tokyo Institute of Technology, Tokyo, Japan

Session Co-Organizer: Unni Vadakkanmaruveedu, Qualcomm, San Diego, CA, United States

Design, Fabrication and Characterization of a Mechanical Micropump

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48017

Bin Duan, Tinghui Guo, Minqing Luo, Huazhong University of Science and Technology, Wuhan, China, Xiaobing Luo, Huazhong University of Science. and Technology, Wuhan, China

Art and Science towards Noiseless Driving of Liquid Metal Coolant for Advanced Thermal Management of High Heat Flux Device

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48698

Jing Liu, Chinese Academy of Sciences, Beijing, China, Zhong-Shan Deng, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China, Zhizhu He, Technical Institute of Physics and Chemistry, Beijing, China

Liquid Flow Analysis for Porous Media in Large Vapor Chamber with Multiple Heat Sources

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48770

Sergio Escobar, Hewlett Packard, Palo Alto, CA, United States, Niru Kumari, Hewlett-Packard, Palo Alto, CA, United States, Rocky Shih, Hewlett Packard Company, Palo Alto, CA, United States, Sarah Anthony, Hewlett-Packard, Palo alto, CA, United States, Cullen Bash, Hewlett Packard Co, Palo Alto, CA, United States

Next Generation of Power Electronics Cooling Utilizing an Integrated Heat Sink: Thermosiphon vs. Pump Driven Loop

InterPACK Technical Presentation: InterPACKICNMM2015-48649

Fabio Battaglia, Politecnico di Milano, Milan, Italy, Christian D. Bonk, Veena V. Rao, Amir Shooshtari, University of Maryland, College Park, MD, United States, Serguei Dessiatoun, University of Maryland, Colmar Manor, MD, United States, Michael Ohadi, University of Maryland, College Park, MD, United States

Numerical and Experimental Investigation of Shell-and-Tube Phase Change Material Thermal Storage Unit

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48061

Thomas H. Sherer II, Georgia Institute of Technology, Anniston, AL, United States, Yogendra Joshi, Georgia Institute of Technology, Atlanta, GA, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-8
Embedded cooling for 3D ICs

5-8-1
Embedded cooling for 3D ICs

Mezzanine Level, International Room 9:30am - 11:00am

Session Organizer: Pritish Parida, IBM, Yorktown Heights, NY, United States

Session Co-Organizer: Navdeep Singh Dhillon, MIT, Cambridge, MA, United States

A Study on Flow Boiling in Microchannel with Piranha Pin Fin

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48103

Xiangfei Yu, Corey Woodcock, Yingying Wang, RPI, troy, NY, United States, Joel Plawsky, Rensselaer Polytechnic, Troy, NY, United States, Yoav Peles, University of Central Florida, Orlando, FL, United States

Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48341

Fanghao Yang, IBM, Yorktown Heights,, NY, United States, Mark Schultz, IBM TJ Watson Research Center, Yorktown Heights, NY, United States, Pritish Parida, IBM, Yorktown Heights, NY, United States, Evan Colgan, IBM Tj Watson Research Ctr, Yorktown Heights, NY, United States, Robert Polastre, Bing Dang, Cornelia Tsang, Michael Gaynes, John Knickerbocker, Timothy Chainer, IBM, Yorktown Heights, NY, United States

Embedded Two-Phase Cooling of Large 3D Compatible Chips with Radial Channels

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48348

Mark Schultz, IBM TJ Watson Research Center, Yorktown Heights, NY, United States, Fanghao Yang, IBM, Yorktown Heights,, NY, United States, Evan Colgan, IBM Tj Watson Research Ctr, Yorktown Heights, NY, United States, Robert Polastre, Bing Dang, Cornelia Tsang, Michael Gaynes, Pritish Parida, John Knickerbocker, Timothy Chainer, IBM, Yorktown Heights, NY, United States

3D IC with Embedded Microfluidic Cooling: Technology, Thermal Performance, and Electrical Implications

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48584

Xuchen Zhang, Xuefei Han, Thomas Sarvey, Craig E. Green, Peter Kottke, Andrei Fedorov, Yogendra Joshi, Muhannad Bakir, Georgia Institute of Technology, Atlanta, GA, United States

Modeling Conjugate Heat Transfer in 3D Microelectronics with Embedded Microchannels using a Hybrid Analytical and Finite Element Method

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48830

Louis-Michel Collin, Université de Sherbrooke, Sherbrooke, QC, Canada, Vincent Fiori, Perceval Coudrain, Sandrine Lhostis, STMicroelectronics, Crolles, Isère, France, Séverine Chéramy, Univ. Grenoble Alpes, Grenoble, Isère, France, Jean-Philippe Colonna, Benoît Mathieu, University Grenoble Alpes, Grenoble Cedex 9, Isère, France, Abdelkader Souifi, Institut des Nanotechnologies de Lyon (INL) - UMR CNRS 5270, Villeurbanne Cedex, Rhône, France, Luc Frechette, Université de Sherbrooke, Sherbrooke, QC, Canada

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-3
Continuum/Atomistic Modeling and Simulations

6-3-2
Continuum/Atomistic Modeling and Simulations 2

Lobby Level, Empire Room 9:30am - 11:00am

Session Organizer: Liyong Sun, Penn State University Behrend, Erie, PA, United States

Session Co-Organizer: Shalabh Maroo, Syracuse University, Syracuse, NY, United States

A New Algorithm for Contact Angle Estimation in Molecular Dynamics Simulations

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48569

Sumith YesudasanDaisy, Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Modeling of a Non-Periodic Boundary Condition with Entrance and Exit in Dissipative Particle Dynamics

ICNMM Technical Paper Publication: InterPACKICNMM2015-48716

Erik Johansson, Toru Yamada, Jinliang Yuan, Bengt Sundén, Lund University, Lund, Sweden

A Molecular Dynamics Study for Stability of Thin Water Films on Nanostructured Surfaces

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48078

Liyong Sun, Jun Zhou, Penn State University Behrend, Erie, PA, United States

Droplet Evaporation of Water on Platinum using Molecular Dynamics Simulations

ICNMM Technical Presentation: InterPACKICNMM2015-48226

Sumith YesudasanDaisy, Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Droplet Formation in a T-junction Microfluidic Device in the Presence of an Electric Field

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48388

Zeeshan Ahmad, Rattandeep Singh, Indian Institute of Technology, New Delhi, Delhi, India, Supreet Singh Bahga, Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi, Delhi, India, Amit Gupta, Indian Institute of Technology, New Delhi, Delhi, India

6-6
Thin Film/Surface Tension Driven Flows

6-6-1

Thin Film Transport Phenomena

Mezzanine Level, Hunt Room 9:30am - 11:00am

Session Organizer: Fanghao Yang, IBM, Yorktown Heights,, NY, United States

Session Co-Organizer: Xiaopeng Qu, Duke University, Durham, NC, United States

Flow and Heat Transfer in Liquid Films Flowing over Highly Curved Surfaces

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48149

Zezhi Zeng, University of California, Los Angeles, Los Angeles, CA, United States, Gopinath Warrier, University of California, Los Angeles, Reseda, CA, United States, Yongho Ju, University of California, Los Angeles, Los Angeles, CA, United States

Measurement of Effective Capillary Radius and Contact Angle within Wick Structures

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48223

Saitej Ravi, University of Florida, Gainesville, FL, United States, David Horner, University of Florida, Tallahassee, FL, United States, Saeed Moghaddam, University of Florida, Gainesville, FL, United States

Nanoscopic Topography of Thin Water Film at Equilibrium State

ICNMM Technical Presentation: InterPACKICNMM2015-48282

Yajun Deng, Lei Chen, Jiapeng Yu, Hao Wang, Peking University, Beijing, China

Micro/Nano Patterning of Thin Ionic Liquid Films Using Heterogeneous Electric Field

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48530

Hadi Nazaripoor, Charles R koch, Mohtada Sadrzadeh, University of Alberta, Edmonton, AB, Canada, Subir Bhattacharjee, Water Planet Engineering, Inglewood, CA, United States

Modeling of Flow and Heat Transfer in a Molten Glass Mini-Film for High Temperature Heat Collection in a Falling-Film Solar Central Receiver

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48532

Ruth H. Reed, UC Berkeley, Berkeley, CA, United States, Benjamin Elkin, Justin Raade, Halotechnics, Inc., Emeryville, CA, United States, Van P. Carey, University of California, Berkeley, Berkeley, CA, United States

ADVANCED FABRICATION AND MANUFACTURING

7-1
Novel Fabrication Methods for Micro- and Nano- scale Devices

7-1-2
Novel Fabrication Methods II

Lobby Level, Green Room 9:30am - 11:00am

Session Organizer: David A. Willis, SMU, Dallas, TX, United States

Session Co-Organizer: Rajiv Malhotra, Oregon State University, Corvallis, OR, United States

Structure of Colloidal Dispersions Printed Using Electrospray

InterPACK Technical Presentation: InterPACKICNMM2015-48575

Nicholas A. Brown, Paul R. Chiarot, State University of New York at Binghamton, Binghamton, NY, United States

Electrospray Deposition on Uneven Surfaces

InterPACK Technical Presentation: InterPACKICNMM2015-48591

Sepehr Maktabi, Paul R. Chiarot, State University of New York at Binghamton, Binghamton, NY, United States

Nanomaterials Pattering using an Inkjet Printing

ICNMM Technical Presentation: InterPACKICNMM2015-48160

Changho Choi, Zhongwei Gao, Oregon State University, Corvallis, OR, United States, Alvin Chang, Corvallis High School, Corvallis, OR, United States, Chih-Hung Chang, Oregon State University, Corvallis, OR, United States

A Model to Guide Template-Based Nanoparticle Printing Development

InterPACK Technical Paper Publication: InterPACKICNMM2015-48449

David A. Rolfe, University of California, Berkeley, Berkeley, CA, United States, Kristen L Dorsey, University of California, San Diego, La Jolla, CA, United States, Jim C. Cheng, Maxim Integrated, San Jose, CA, United States, Albert Pisano, University of California, San Diego, Berkeley, CA, United States

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

8-2
Biomicrofluidics and Lab-on-a-chip

8-2-2
Biomicro II

Mezzanine Level, Far East Room 9:30am - 11:00am

Session Organizer: Michael Schrlau, Rochester Institute of Technology, Rochester, NY, United States

Session Co-Organizer: Jeff Darabi, Southern Illinois University Edwardsville, Edwardsville, IL, United States

Numerical Model of Template-Based Chemical Vapor Deposition Processes to Manufacture Carbon Nanotubes for Biological Devices

ICNMM Technical Paper Publication: InterPACKICNMM2015-48520

Yashar Seyed Vahedein, Michael Schrlau, Rochester Institute of Technology, Rochester, NY, United States

Development of Microfluidic Instrumentation to Support Biofilm and Membrane Biology Research

ICNMM Technical Presentation: InterPACKICNMM2015-48719

Paul R. Chiarot, State University of New York at Binghamton, Binghamton, NY, United States

Controlled all Aqueous Two Phase Droplet Generation with Microfluidics

ICNMM Technical Presentation: InterPACKICNMM2015-48755

Byeong-Ui Moon, Steven Jones, Dae Kun Hwang, Scott Tsai, Ryerson University, Toronto, ON, Canada

A Two-Dimensional Microfluidic-Based Tactile Sensor for Tissue Palpation Application under the Influence of Misalignment

InterPACK Technical Paper Publication: InterPACKICNMM2015-48134

Yichao Yang, Jiayue Shen, Old Dominion University, Norfolk, VA, United States, Zhili Hao, Old Dominion University, Virginia Beach, VA, United States

Electrowetting on Dielectric (EWOD) Assisted Droplet Desiccation

ICNMM Technical Paper Publication: InterPACKICNMM2015-48498

Collin Burkhart, Rochester Institute of Technology, Churchville, PA, United States, Peter D. Dunning, Michael Schertzer, Rochester Institute of Technology, Rochester, NY, United States

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-3
Scalable and Integrated Nanotechnology

Lobby Level, French Room 9:30am - 11:00am

Session Organizer: Debbie G. Senesky, Stanford University, Stanford, CA, United States

Session Co-Organizer: Carl Arft, SiTime Corporation, Sunnyvale, CA, United States

Nanotechnology: Development of Practical Systems and Nano-Micro-Macro Integration

InterPACK Invited Presentation: InterPACKICNMM2015-48848

Meyya Meyyappan, NASA, Moffett Field, CA, United States

Nano to Macro: Opportunities and Challenges in Scalable Integration

InterPACK Invited Presentation: InterPACKICNMM2015-48849

Liwei Lin, University of California, Berkeley, Berkeley, CA, United States

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

14-2
Interconnects Materials

14-2-1
Interconnect Solder Material Properties I

Diplomat 9:30am - 11:00am

Session Organizer: Pradeep Lall, Auburn University, Auburn, AL, United States

Session Co-Organizer: Virendra Jadhav, Microsoft, Seattle, WA, United States

Fuming Acid Based Decapsulation Process for Copper-Aluminum Wirebond System Molded With Different EMCs

InterPACK Technical Paper Publication: InterPACKICNMM2015-48638

Pradeep Lall, Shantanu Deshpande, Auburn University, Auburn, AL, United States, Luu Nguyen, Texas Instruments Inc., Santa Clara, CA, United States

A Study on the Evolution of the High Strain Rate Mechanical Properties of SAC105 Leadfree Alloy at High Operating Temperatures

InterPACK Technical Paper Publication: InterPACKICNMM2015-48389

Pradeep Lall, Vikas Yadav, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, David Locker, US Army AMRDEC, Huntsville, AL, United States

Corrosion Behavior of SUS304 Brazed Joint with Fe-based Filler Alternative to Ni-based Filler

InterPACK Technical Presentation: InterPACKICNMM2015-48675

Takahiro Tsunoda, Ikuo Shohji, Gunma University, Kiryu, Gunma, Japan, Kotaro Matsu, Tokyo Braze Co., Ltd., Shiki, Saitama, Japan, Kangdao Shi, Gunma University, Maebasi, Gunma, Japan, Yasuhiro Taguchi, Tokyo Braze Co., Ltd., Shiki, Saitama, Japan

Tensile Properties and Microstructures of High Temperature Bi-based Lead-free Solder

InterPACK Technical Presentation: InterPACKICNMM2015-48676

Zhang Haidong, Ikuo Shohji, Gunma University, Kiryu, Gunma, Japan, Masayoshi Shimoda, Hirohiko Watanabe, Fuji Electric Co.,Ltd, Hino, Japan

Fatigue Properties and Fatigue Crack Propagation Behavior of Low-Ag Lead-free Sn-1.0Ag-0.7Cu-1.6Bi-0.2In Solder

InterPACK Technical Presentation: InterPACKICNMM2015-48677

Yuki Takahashi, Ikuo Shohji, Gunma University, Kiryu, Gunma, Japan

MEMS AND NEMS

3-1
N/MEMS: Sensors, Actuators, & Resonators

3-1-2
N/MEMS Sensors & Actuators (Part II)

Lobby Level, French Room 1:00pm - 2:30pm

Session Organizer: Chih-Ming Lin, Silicon Labs Inc., Sunnyvale, CA, United States

Session Co-Organizer: Nai-Kuei (Nick) Kuo, Qualcomm, San Jose, CA, United States

NEM Switches for Ultra-Low-Power Computation and Information Storage

InterPACK Invited Presentation: InterPACKICNMM2015-48232

Tsu-Jae Liu, University of California, Berkeley, Berkeley, CA, United States

Piezoelectric Micromachined Ultrasonic Transducers: Towards Ultrasound in Consumer Electronics

InterPACK Invited Presentation: InterPACKICNMM2015-48394

David Horsley, Yipeng Lu, Ofer Rozen, University Of California, Davis, Davis, CA, United States, Hao-Yen Tang, Bernhard Boser, University of California, Berkeley, Berkeley, CA, United States

CMUTs in Permanent Contact Operation for High Output Pressure

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48733

Min-Chieh Ho, Fluenta Inc., Sunnyvale, CA, United States, Maik Hoffmann, Brandenburg University of Technology, Cottbus, Germany, Alexander Unger, Technische Universität Darmstadt, Darmstadt, Germany, Kwan Kyu Park, Hanyang University, Seoul, Korea (Republic), Mario Kupnik, Technische Universität Darmstadt, Darmstadt, Germany, Butrus T Khuri-Yakub, Stanford, Stanford, CA, United States

A Microfluidic-Based Tactile Sensor for 3-DOF Force/ Torque Detection

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48133

Yichao Yang, Old Dominion University, Norfolk, VA, United States, Zhili Hao, Old Dominion University, Virginia Beach, VA, United States

THERMAL MANAGEMENT

4-4
Thermal Management: Device Level Thermal Management

4-4-4
Heat Spreading

Lobby Level, Green Room 1:00pm - 2:30pm

Session Organizer: Shakti Chauhan, GE, Schenectady, NY, United States

Session Co-Organizer: Kazuyoshi Fushinobu, Tokyo Institute of Technology, Tokyo, Japan

Hot Spot Elimination by Thin and Smart Heat Spreader

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48019

Mohammad Shahed Ahamed, Fujikura Ltd., Tokyo, Japan, Yuji Saito, Fujikura LTD, Fujikura, Japan, Masataka Mochizuki, Koichi Mashiko, Fujikura Ltd., Tokyo, Japan

Experimental Investigation of Fluid Motion in Pulsating Heat Pipe

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48285

Hyung Yun Noh, KAIST, Daejeon, Korea (Republic), Sung Jin Kim, Kaist, Taejon, Korea (Republic)

Thermal Behavior of Rectangular Flux Channels with Discretely Specified Contact Flux and Temperature

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48051

Masood Razavi, Memorial University of Newfoundland, Burnaby, BC, Canada, Yuri Muzychka, Memorial Univ of Newfoundland, St John's, NL, Canada, Serpil Kocabiyik, Memorial University of Newfoundland, St. John's, NL, Canada

Thermal Spreading Resistance in Multilayered Orthotropic Circular Disks (Flux Tubes) with Interfacial Resistance and Variable Heat Flux

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48243

Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada

Numerical Investigation of Thermal Resistance in a Rectangular Flux Channel with Non-Uniform Heat Convection in the Sink Plane

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48685

Masood Razavi, Memorial University of Newfoundland, Burnaby, BC, Canada, Alireza Dehghani-Sanij, Memorial University of Newfoundland, St Johns, NL, Canada, Yuri Muzychka, Memorial Univ of Newfoundland, St John's, NL, Canada

4-8
Thermal Management: Phase Change Materials

4-8-4
Phase Change Materials

Mezzanine Level, California Room 1:00pm - 2:30pm

Session Organizer: Amir Shooshtari, University of Maryland, College Park, MD, United States

Session Co-Organizer: Shinji Nakagawa, Toyama Prefectural University, Toyama, Japan, Fatemeh Hassanipour, University of Texas, Dallas, TX, United States

Lattice Boltzmann Simulations on the Charging Procedure of a Solar Storage Tank with Immersed Phase Change Materials

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48025

Yan Su, Faculty of Science and Technology, Macau, Macau

The Influence of Nanoparticle Type on the Viscosity of Nanoenhanced Energy Storage Materials

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48082

Kieran Hess, Amy Fleischer, Villanova University, Villanova, PA, United States

Enhanced Melting for Transient Thermal Management

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48369

Tomer Rozenfeld, Ron Hayat, Yoram Kozak, Ben-Gurion University of the Negev, Beer-Sheva, Israel, Gennady Ziskind, Ben-Gurion University of the Negev, Beer-Sheva, Israel

Passive Thermal Management Usingphase Change Materials: Experimental Evaluation of Thermal Resistances

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48499

Yash Ganatra, Amy Marconnet, Purdue University, West Lafayette, IN, United States

Quantification of Phase Change Material Energy Storage Capability Using Multiphysics Simulations

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48522

William E. O'Connor, Aaron Wemhoff, Villanova University, Villanova, PA, United States

4-11
Power-Performance-Reliability Co-design for ICs

4-11-1
Power-Performance-Reliability Co-design for ICs

Lobby Level, Garden Room 1:00pm - 2:30pm

Session Organizer: Arvind Sridhar, IBM, Zurich, Switzerland

Session Co-Organizer: Ayse Coskun, Boston University, Boston, MA, United States, Ankur Srivastava, UMD, College Park, MD, United States

Design Space Exploration of 3D CPUs and Micro-Fluidic Heatsinks with Thermo-Electrical-Physical Co-Optimization

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48344

Caleb Serafy, University of Maryland, College Park, MD, United States, Ankur Srivastava, UMD, College Park, MD, United States, Avram Bar-Cohen, University of Maryland At College Park, College Park, MD, United States, Donald Yeung, University of Maryland, College Park, MD, United States

Co-placement for Pin-fin Based Micro-Fluidically Cooled 3D-ICs.

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48354

Zhiyuan Yang, University of Maryland, College Park, MD, United States, Ankur Srivastava, UMD, College Park, MD, United States

Electrical-Thermal-Reliability Co-Design for TSV-Based 3D-ICs

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48386

Tiantao Lu, University of Maryland, College Park, MD, United States, Ankur Srivastava, UMD, College Park, MD, United States

Multi-Physics Driven Co-Design of 3D Multicore Architectures

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48533

He Xiao, Wen Yueh, Saibal Mukhopadhyay, Sudhakar Yalamanchili, Georgia Institute of Technology, Atlanta, GA, United States

Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48690

Arvind Sridhar, IBM, Zurich, Switzerland, Chin Lee Ong, IBM Research - Zurich, Rueschlikon, ZH, Switzerland, Stefan Paredes, IBM, Rueschlikon, ZH, Switzerland, Thomas Brunschwiler, IBM Research - Zurich, Rueschlikon, Switzerland, Bruno Michel, IBM

Research - Zurich, Rueschlikon Zurich, Switzerland, Pritish Parida, IBM, Yorktown Heights, NY, United States, Evan Colgan, IBM Tj Watson Research Ctr, Yorktown Heights, NY, United States, Timothy Chainer, IBM, Yorktown Heights, NY, United States, Catherine Gorle, Columbia University, New York, NY, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-9
Two Phase Boiling Computational Modeling Challenges

5-9-1
Two Phase Boiling Computational Modeling Challenges 1

Mezzanine Level, International Room 1:00pm - 2:30pm

Session Organizer: John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

Session Co-Organizer: Kaiser Matin, System Planning Corporation, Arlington, VA, United States

Use of Two-Phase CFD Simulations to Develop a Boiling Heat Transfer Prediction Method for Slug Flow within Microchannels

InterPACK Technical Paper Publication:. InterPACKICN-MM2015-48033

Mirco Magnini, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

Novel Dynamic Numerical Microchannel Evaporator Model to Investigate Parallel Channel Instabilities

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48066

Tom Saenen, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Vaud, Switzerland, John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

CFD Analysis of Flow Boiling in a Silicon Microchannel with Non-Uniform Heat Flux

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48098

Daniel Lorenzini, Yogendra Joshi, Georgia Institute of Technology, Atlanta, GA, United States

Validation Study for VOF Simulations of Boiling in a Micro-channel

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48129

Catherine Gorle, Columbia University, New York, NY, United States, Pritish Parida, IBM, Yorktown Heights, NY, United States, Hyoung-soon Lee, Farzad Houshmand, Stanford University, Stanford, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

A Cost-Effective Modeling Approach for Simulating Phase Change and Flow Boiling in Microchannels

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48178

Zhenhai Pan, Justin A. Weibel, Purdue University, West Lafayette, IN, United States, Suresh V. Garimella, Purdue University, West Lafayette, IN, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-3
Continuum/Atomistic Modeling and Simulations

6-3-3
Continuum/Atomistic Modeling and Simulations 3

Lobby Level, Empire Room 1:00pm - 2:30pm

Session Organizer: Alina Alexeenko, Purdue University, West Lafayette, IN, United States

Session Co-Organizer: Leandro Sphaier, Universidade Federal Fluminense, Niteroi, RJ, RJ, Brazil

Intrinsic Thermal Conductivity of Wurtzite AlxGa1-xN, InxGa1-xN and InxAl1-xN from First-principles Calculation

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48032

Jinlong Ma, Huazhong University of Science and Technology, Wuhan, China, Baoling Huang, Hong Kong University of Science and Technology, Kowloon, Hong Kong, Wu Li, Scientific Computing & Modelling NV, Amsterdam, Netherlands, Xiaobing Luo, Huazhong University of Sci. & Tec., Wuhan, China

The Prediction of the Thermal Conductivity of Gallium Arsenide: a Molecular Dynamics Study

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48114

Fernan Saiz, Cristina H. Amon, University of Toronto, Toronto, ON, Canada

Microchannel Flow Enhancement by Microplasma Actuation

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48428

Gayathri Shivkumar, Siva Tholeti, Alina Alexeenko, Purdue University, West Lafayette, CA, United States

Design of Multiscale Nanofluidic Networks

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48723

David Stephenson, Duncan A. Lockerby, University of Warwick, Coventry, United Kingdom, Matthew K. Borg, University of Strathclyde, Glasgow, Scotland, United Kingdom, Jason M. Reese, University of Edinburgh, Edinburgh, United Kingdom

Molecular Dynamics Simulation Study into the Correlation of Thermo-physical Properties Of Water-Alcohol Mixtures

InterPACK Technical Presentation: InterPACKICNMM2015-48750

James Cannon, The University of Tokyo, Tokyo, Japan, Tohru Kawaguchi, Takashi Kaneko, Takuya Fuse, DENSO Corporation, Japan, Junichiro Shiomi, University of Tokyo, Tokyo, Japan

6-6
Thin Film/Surface Tension Driven Flows

6-6-2
Droplet dynamics

Mezzanine Level, Hunt Room 1:00pm - 2:30pm

Session Organizer: Xianming Dai, Pennsylvania State University, State College, PA, United States

Influence of Wettability and Geometric Patterns of Micro/Nano-Engineered Surfaces on Water Harvesting Performance

ICNMM Technical Presentation: InterPACKICNMM2015-48162

Donghyeon Seo, Kyung Hee University, Yongin, Korea (Republic), Choongyeop Lee, Korea Aerospace University, Goyang, Korea (Republic), Youngsuk Nam, Kyung Hee University, Yongin, Korea (Republic)

Active Surfaces: Ferrofluid-Impregnated Surfaces for Active Manipulation of Droplets

ICNMM Technical Presentation: InterPACKICNMM2015-48774

Karim Khalil, Seyed Reza Mahmoudi, MIT, Cambridge, MA, United States, Numan Abu-Dheir, KFUPM, Dhahran, Saudi Arabia, Kripa K. Varanasi, MIT, Cambridge, MA, United States

On the Lifetime of Non-coalescent Levitated Droplets

ICNMM Technical Paper Publication. InterPACKICN-MM2015-48826

Ashkan Davanlou, University of Central Florida, Orlando, FL, United States, Ranganathan Kumar, University of Central Florida, Chuluota, FL, United States

Controlling Dynamic Wetting by Surface Charges and Microstructures

InterPACK Technical Presentation: InterPACKICNMM2015-48762

Satoshi Nita, The University of Tokyo, Bunkyo-ku, Tokyo, Japan, Jiayu Wang, The University of Tokyo, Bnkyo-ku, Tokyo, Japan, Minh Do-Quang, KTH Royal Institute of Technology, Stockholm, Sweden, Yue Feng, The University of Tokyo, Bunkyo-ku, Tokyo, Japan, Yuji Suzuki, The University Of Tokyo, Tokyo, Japan, Gustav Amberg, KTH Royal Institute of Technology, Stockholm, Sweden, Junichiro Shiomi, University of Tokyo, Tokyo, Japan

Thermal Performance of Triangulated Array of Droplet Streams

InterPACK Technical Presentation: InterPACKICNMM2015-48672

Taolue Zhang, Jorge Alvarado, Texas A&M University, College Station, TX, United States

Marangoni Flow Induced Self-assembling of Nanomotors

ICNMM Technical Presentation: InterPACKICNMM2015-48218

Fengchang Yang, Virginia Tech, Blacksburg, VA, United States, Manoj Manjare, Yiping Zhao, University of Georgia, Athens, GA, United States, Rui Qiao, Virginia Tech, Blacksburg, VA, United States

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

8-2
Biomicrofluidics and Lab-on-a-chip

8-2-3
Biomicro III

Mezzanine Level, Far East Room 1:00pm - 2:30pm

Session Organizer: Carolyn Ren, University of Waterloo, Waterloo, ON, Canada

Session Co-Organizer: Sidy Ndao, University of Nebraska-Lincoln, Lincoln, NE, United States

Evaluating the Efficacy of Hollow Fiber Pre-Concentrator for Water Quality Monitoring

ICNMM Technical Paper Publication: InterPACKICNMM2015-48192

Saumyadeb Dasgupta, Ravi Chavali, Naga Siva Gunda, Sushanta Mitra, York University, Toronto, ON, Canada

Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts

ICNMM Technical Presentation: InterPACKICNMM2015-48413

Arzu Ozbey, Sarp Akgönül, Zaliha Alkm Avar, Merve Züvin, Özlem Oral, Devrim Gozuacik, Ali Kosar, Sabanci University, Istanbul, Turkey

Dielectrophoretic Capture of Circulating Tumor Cells from Physiological Buffers

ICNMM Technical Presentation: InterPACKICNMM2015-48452

Anil Koklu, Ahmet C. Sabuncu, Southern Methodist University, Dallas, TX, United States, ShiHong Ma, University of Texas Medical School, Dallas, TX, United States, David A. Willis, SMU, Dallas, TX, United States, Ganesh Raj, University of Texas Medical School, Dallas, TX, United States, Ali Beskok, Southern Methodist University, Chesapeake, VA, United States, Reny Fernandez, Southern Methodist University, Dallas, TX, United States

Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach

InterPACK Technical Paper Publication: InterPACKICNMM2015-48491

Ashok Baniya, Leland Weiss, Louisiana Tech University, Ruston, LA, United States, Christopher Kevil, John D Glawe, LSU health Shreveport, Shreveport, LA, United States, Eric Borquist, Davis Bailey, Debbie Wood, Suvhashis Thapa, Louisiana Tech University, Ruston, LA, United States, Prabhu Arumugam, LA Tech, Ruston, LA, United States, Gaurab Dutta, Louisiana Tech University, Ruston, LA, United States

Impedimetric Feedback in Particle Laden Digital Microfluidic Devices

ICNMM Technical Paper Publication: InterPACKICNMM2015-48494

Emrys Scott-Murrell, David Lanza, Michael Schertzer, Rochester Institute of Technology, Rochester, NY, United States

9-1
Panel Topics

9-1-5
The role of Additive Manufacturing on Next Generation Thermal Management Systems

Lobby Level, Pavilion Room 1:00pm - 2:30pm

Session Organizer: Michael Ohadi, University of Maryland, College Park, MD, United States

Session Co-Organizer: Vinod Narayanan, Oregon State University, Corvallis, OR, United States

Panelists:

Prof. Avi Bar Cohen, Mechanical Engineering, University of Maryland

Jack L. Beuth, Professor Mechanical Engineering, Carnegie Mellon University

Arun Muley, Lead Thermal Management Engineer, Boeing

Jonathan Cornelus, Business Development Manager, 3D Systems

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

14-2
Interconnects Materials

14-2-2
Interconnect Solder Material Properties II

Arcade Level, Diplomat Room 1:00pm - 2:30pm

Session Organizer: Tomoyuki Yamada, Kyocera America Inc., Fishkill, NY, United States

Session Co-Organizer: Marie-Claude Paquet, IBM Canada, Bromont, QC, Canada

Viscoplastic Constitutive Model for Lead-Free Solder Including Effects of Silver Content, Solidification Profile, and Severe Aging

InterPACK Technical Paper Publication: InterPACKICNMM2015-48619

Munshi Basit, Mohammad Motalab, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Pradeep Lall, Auburn University, Auburn, AL, United States

Characterization of Doped SAC Solder Materials and Determination of Anand Parameters

InterPACK Technical Paper Publication: InterPACKICNMM2015-48624

Sudan Ahmed, Munshi Basit, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Pradeep Lall, Auburn University, Auburn, AL, United States

Mechanical Constitutive Properties of Two High-Temperature Lead-Rich Solders

InterPACK Technical Paper Publication: InterPACKICNMM2015-48708

Qian Jiang, University of Maryland, College Park, MD, United States, Abhijit Dasgupta, CALCE/University of Maryland, College Park, MD, MD, United States, Subhasis Mukherjee, University of Maryland, College Park, Hyattsville, MD, United States, Bastian Vogt, University of Maryland, College Park, MD, United States, David Shaddock, General Electric Global Research, Niskayuna, NY, United States, Liang Yin, GE Global Research, Niskayuna, NY, United States

Mechanistic Modeling of the Anisotropic Steady State Creep Response of SnAgCu Single Crystal Joints

InterPACK Technical Paper Publication. InterPACKICNMM2015-48710

Subhasis Mukherjee, University of Maryland, College Park, MD, United States, Abhijit Dasgupta, CALCE/University of Maryland, College Park, MD, MD, United States, Thomas R. Bieler, Bite Zhou, Michigan State University, East Lansing, MI, United States

Aging Induced Evolution of the Cyclic Stress-Strain Behavior of Lead Free Solders

InterPACK Technical Presentation: InterPACKICNMM2015-48792

Nianjun Fu, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Pradeep Lall, Auburn University, Auburn, AL, United States

EMERGING TECHNOLOGY FRONTIERS

2-5
Nanoscale Heat Transport and Characterization Methods

2-5-3
Heat Transfer and Thermal Measurements of Nanosystems

Lobby Level, Empire Room 2:45pm - 4:15pm

Session Organizer: Chris Dames, UC Berkeley, Berkeley, CA, United States

Session Co-Organizer: Banafsheh Barabadi, MIT, Cambridge, MA, United States

Thermal boundary conductance mechanisms across open-atmosphere annealed GaN interfaces and beta-Ga2O3 thin films

InterPACK Technical Presentation: InterPACKICNMM2015-48763

Chester Szwejkowski, University of Virginia, Charlottesville, VA, United States, Nicole Creange, James Madison University, Harrisonburg, VA, United States, Ashutosh Giri, Brian Donovan, University of Virginia, Charlottesville, VA, United States, Costel Constantin, James Madison University, Harrisonburg, VA, United States, Patrick Hopkins, University of Virginia, Charlottesville, VA, United States

Size Effects in the Thermal Conductivity of GaAs/AlAs Superlattices and AlGaAs Alloys for Thermal Management Applications

InterPACK Technical Presentation: InterPACKICNMM2015-48766

Ramez Cheaito, University of Virginia, Charlottesville, VA, United States, Sadhvikas Addamane, Thomas J. Rotter, University of New Mexico, Albuquerque, NM, United States, John T. Gaskins, University of Virginia, Charlottesville, VA, United States, Ganesh Balakrishnan, University of New Mexico, Albuquerque, NM, United States, Patrick Hopkins, University of Virginia, Charlottesville, VA, United States

Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment

InterPACK Technical Presentation: InterPACKICNMM2015-48794

Dustin Kendig, Microsanj, Santa Clara, CA, United States, Amirkoushyar Ziabari, Kazuaki Yazawa, Ali Shakouri, Purdue University, West Lafayette, IN, United States, Alex Shakouri, Microsanj, Santa Clara, CA, United States, Bjorn Vermeersch, Purdue University, West Lafayette, IN, United States

Parallel Measurement of Thermal Conductivity and Convection Coefficient of Micro/Nanowires Based on Steady-State Electro-Raman-Thermal Technique

InterPACK Technical Paper Publication: InterPACKICNMM2015-48736

Man Li, Wuhan University, Wuhan, China, Yanan Yue, Wuhan Univ., Wuhan, MI, United States

High-Throughput Measurement Platform for Simultaneous Thermal and Thermoelectric Property Characterization

InterPACK Technical Presentation: InterPACKICNMM2015-48579

Collier Miers, Amy Marconnet, Purdue University, West Lafayette, IN, United States

MEMS AND NEMS

3-1
N/MEMS: Sensors, Actuators, & Resonators

3-1-3
Advances in MEMS Resonators and Resonator Modeling

Lobby Level, Green Room 2:45pm - 4:15pm

Session Organizer: Philip Feng, Case Western Reserve University, Cleveland, OH, United States

Session Co-Organizer: Chengjie Zuo, Qualcomm, San Diego, CA, United States

Monolithic MEMS + Photonic Systems

InterPACK Invited Presentation: InterPACKICNMM2015-48384

Sunil Bhave, Cornell University, Ithaca, MA, United States

Numerical Method for Investigating Thermal Nonlinearity in Lithium Niobate Micro-Resonators

InterPACK Technical Presentation: InterPACKICNMM2015-48391

Ruochen Lu, University of Illinois at Urbana-Champaign, Urbana, IL, United States, Songbin Gong, University of Illinois at Urbana Champaign, Urbana, IL, United States

Fast Spurious Mode Prediction for Piezoelectric MEMS Resonator Design

InterPACK Technical Presentation: InterPACKICNMM2015-48526

Rahul Jhaveri, Coventor, Inc, Waltham, MA, United States, Sandipan Maity, Coventor, Inc, Campbell, MA, United States, Mattan Kamon, Coventor, Inc., Waltham, MA, United States

3-2
N/MEMS: Energy Harvesting & Storage

3-2-1
Energy Harvesting Systems, Batteries & Supercapacitors

Mezzanine Level, Hunt Room 2:45pm - 4:15pm

Session Organizer: Dan Steingart, Princeton University, Princeton, NJ, United States

Session Co-Organizer: Eri Takahashi, EcoHarvester, Berkeley, CA, United States

Micro-Stereolithography of Three-dimensional Polymeric Springs for Vibration Energy Harvesting

InterPACK Technical Presentation: InterPACKICNMM2015-48820

Cheng Sun, Northwestern University, Evanston, IL, United States

Power Limits of Rotational and Translational Inertial Power Harvesters in Typical Vibration Environments

InterPACK Technical Presentation: InterPACKICNMM2015-48081

Igor Bargatin, Akshay Ananthakrishnan, University of Pennsylvania, Philadelphia, PA, United States, Inna Kozinsky, Inna Kozinsky Technical Consulting, Wynnewood, PA, United States

Zinc/Copper Hexacyanoferrate based High Potential Dual Ion Battery with High Rate Capability and Long Cycle Life

InterPACK Technical Presentation: InterPACKICNMM2015-48552

Tanya Gupta, Andrew Kim, Benjamin Hertzberg, Mylad Chamoun, Princeton University, Princeton, NJ, United States

Spray-Coated Flexible Hexacyanoferrate Electrodes With Neutral Electrolytes For Wearable Batteries

InterPACK Technical Presentation: InterPACKICNMM2015-48560

Andrew Kim, Tanya Gupta, Princeton University, Princeton, NJ, United States, Barry Van Tassell, The City College of New York, Princeton, NJ, United States, Dan Steingart, Princeton University, Princeton, NJ, United States

In-operando Non-destructive Ultrasonic Interrogation of Structure in Batteries

InterPACK Technical Presentation: InterPACKICNMM2015-48610

Shoham Bhadra, Benjamin Hertzberg, Peter J. Gjeltema, Alexandre Goy, Jason W. Fleischer, Dan Steingart, Princeton University, Princeton, NJ, United States

THERMAL MANAGEMENT

4-5
Thermal Management: Stacked Die & Multi-Chip-Module and Packaging

4-5-1
Thermal Management of Stacked Die and Packages

Mezzanine Level, California Room 2:45pm - 4:15pm

Session Organizer: Ankur Jain, University of Texas at Arlington, Arlington, TX, United States

Session Co-Organizer: Koji Nishi, AMD Japan, Tokyo, Japan, Pritish Parida, IBM, Yorktown Heights, NY, United States, Hemanth Dhavaleswarapu, Intel Corporation, Chandler, AZ, United States

Design Guideline to Improve Thermal Management of 3D Package Using Cu-to-Cu Direct Bonding

InterPACK Technical Paper Publication: InterPACKICNMM2015-48042

Ah-Young Park, State University of New York at Binghamton, Binghamton, NY, United States, Seungbae Park, Binghamton University, Binghamton, NY, United States

Compact Thermal Modeling Methodology for Active and Thermal Bumps in 3D Microelectronic Packages

InterPACK Technical Paper Publication: InterPACKICNMM2015-48104

Arnab Choudhury, Shrenik Kothari, Nayandeep Mahanta, Hemanth Dhavaleswarapu, Intel Corporation, Chandler, AZ, United States, Je Young Chang, Intel Corp, Chandler, AZ, United States

Experimental Characterization of the Vertical and Lateral Heat Transfer in 3D-SIC Packages

InterPACK Technical Paper Publication: InterPACKICNMM2015-48316

Herman Oprins, Vladimir Cherman, Geert Van der Plas, Joeri De Vos, Eric Beyne, IMEC, Leuven, Belgium

Benchmarking Study on the Thermal Management Landscape for 3D ICs: from Back-Side, to Volumetric Heat Removal

InterPACK Technical Paper Publication: InterPACKICNMM2015-48353

Thomas Brunschwiler, IBM Research - Zurich, Rueschlikon, Switzerland, Arvind Sridhar, IBM, Zurich, Switzerland, Chin Lee Ong, IBM Research - Zurich, Rueschlikon, ZH, Switzerland, Gerd Schlottig, IBM Zurich Research Laboratory, Zurich, Switzerland

Modeling Thermal Spreading Resistance in via Arrays

InterPACK Technical Paper Publication: InterPACKICNMM2015-48422

Michael Fish, Patrick McCluskey, University of Maryland, College Park, MD, United States, Avram Bar-Cohen, University of Maryland At College Park, College Park, MD, United States

4-6
Thermal Management: Thermoelectrics

4-6-1
Thermoelectrics

Lobby Level, Garden Room 2:45pm - 4:15pm

Session Organizer: Kazuaki Yazawa, Purdue University, West Lafayette, IN, United States

Session Co-Organizer: Peng Wang, Qualcomm, San Diego, CA, United States, Koji Miyazaki, Kyushu Institute of Technology, Kitakyushu, Japan

High-accuracy Characterization of Thermoelectric Cooler Performance

InterPACK Technical Presentation: InterPACKICNMM2015-48072

Beomjin Kwon, Seung-Hyub Baek, Seong Keun Kim, Jin-Sang Kim,

Korea Institute of Science and Technology, Seoul, Korea (Republic)

Harvesting CPU Waste Heat through Pyroelectric Materials

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48421

Soochan Lee, Patrick E. Phelan, Carole-jean Wu, Nishant Singh, Arizona State University, Tempe, AZ, United States

Printable Thermoelectric Materials

InterPACK Technical Presentation: InterPACKICNMM2015-48618

Kunihisa Kato, Lintec Corporation, Warabi-shi, Saitama, Japan, Takuya Hashiguchi, Hisashi Iwata, Kosuke Kosaka, Koji Miyazaki, Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan

Optimum Design and Operation of Thermoelectric Heat Pump with Two Temperature Reservoirs

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48682

Kazuaki Yazawa, Ali Shakouri, Purdue University, West Lafayette, IN, United States

Enhancement and Optimization of Planar Impingement Heat Transfer for Thermoelectric Power Generation

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48692

Kazuaki Yazawa, Stephen Heister, Purdue University, West Lafayette, IN, United States, Timothy Fisher, Purdue, West Lafayette, IN, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-2
Flow-boiling Experimental Investigations

5-2-1
Flow-boiling Experimental Investigations

Mezzanine Level, International Room 2:45pm - 4:15pm

Session Organizer: Masamichi Kohno, Kyushu University, Fukuoka, Japan

Session Co-Organizer: Deborah V. Pence, Oregon State University, Corvallis, OR, United States

Transient Evolution of Heat Transfer Performance during Flow Boiling in a Microchannel

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48300

Mrinal Jagirdar, National University of Singapore, Singapore, Poh-seng Lee, National University of Singapore, Singapore

Passive Thermosyphon Cooling System for High Heat Flux Servers

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48288

Sylwia Szczukiewicz, Nicolas Lamaison, Jackson Marcinichen, EPFL - LTCM, Lausanne, Switzerland, John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland, Peter Beucher, MicroCool Division of Wolverine Tube, Decatur, AL, United States

Enhanced Flow Boiling of Ethanol in Open Microchannels with Tapered Manifolds in a Gravity-Driven Flow

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48486

Philipp Buchling, Satish Kandlikar, RIT, Rochester, NY, United States

High Heat Flux Subcooled Flow Boiling of Methanol in Microtubes

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48734

Farzad Houshmand, Hyoungsoon Lee, Stanford University, Stanford, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

Mechanistic Considerations for Enhancing Flow Boiling Heat Transfer in Microchannels

ICNMM Technical Paper Publication: InterPACKICNMM2015-48819

Satish Kandlikar, RIT, Rochester, NY, United States

ADVANCED FABRICATION AND MANUFACTURING

7-5
3D Additive Manufacturing

7-5-1
Micro/Nano-scale 3D Printing Technologies

Mezzanine Level, Far East Room 2:45pm - 4:15pm

Session Organizer: Jing Liu, Chinese Academy of Sciences, Beijing, China

Session Co-Organizer: Sang Hoon Nam, MIT, Cambridge, MA, United States

Hybrid Materials Deposition Technology Dedicated to Ceramics Smart 3D Printing

InterPACK Technical Presentation: InterPACKICNMM2015-48127

Rémi Noguéra, Tim Luong, Ceradrop, Limoges, France

Additive Fabrication of Superomniphobic Mushroom-Like Micropillars with Projection Micro-Stereolithography

ICNMM Technical Presentation: InterPACKICNMM2015-48159

Huifeng Du, MIT, Cambridge, MA, United States, Abulimiti Aili, Mohamed Alhosani, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates., Nenad Miljkovic, University of Illinois at Urbana-Champaign, Urbana, IL, United States, Nicholas Fang, MIT, Cambridge, MA, United States, TieJun Zhang, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates

3-D Antenna Structures Using Novel Direct-Write Additive Manufacturing Method

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48187

Md Taibur Rahman, Rahul Panat, Deuk Heo, Washington State University, Pullman, WA, United States

Direct Fabrication of Ending Functional Devices through Hybrid 3D Printing of Liquid Metal and Allied Inks

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48700

Jing Liu, Lei Wang, Chinese Academy of Sciences, Beijing, China, Li-Ting Yi, Tsinghua University, Beijing, China, Zhizhu He, Technical Institute of Physics and Chemistry, Beijing, China, Yang Yang, Bo-Wei Chen, Chinese Academy of Sciences, Beijing, China

9-1
Panel Topics

9-1-2
Mobile Thermal Management

Lobby Level, Pavilion Room 2:45pm - 4:15pm

Session Organizer: Victor Chiriac, Qualcomm Inc, San Diego, CA United States

Session Co-Organizer: Tannaz Harirchian, Intel Corporation, Chandler, AZ, United States

Panelists:

Ken Goodman, Professor and Chair of Mechanical Engineering Department, Stanford University

Mark Hartman, Director, Outlast Technologies

John Fitch, Thermal Scientist, Google, Inc.

Joshua Een, Thermal Engineering Manager, Intel, Inc.

Escada Chiang, Director, Technology Research Division, Asia Vital Components Co.

John Thome, Professor, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-5
Tech talk on Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices

Lobby Level, French Room 2:45pm - 4:15pm

Session Organizer: Saeed Moghaddam, University of Florida, Gainesville, FL, United States

Transport Phenomena and Chemical Reactions in Microchannels

InterPACK Invited Presentation: InterPACKICNMM2015-48859

Norbert Kockmann, TU Dortmund University, Dortmund, Germany

Ultrathin Silicon-based Nanomembranes can Revolutionize Biological Separations and Serve as Advanced Cell Culture Platforms

InterPACK Invited Presentatio: InterPACKICNMM2015-48860

Thomas Gaborski, Rochester Institute of Technology, Rochester, NY, United States

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

Track Organizer: Kamal Sikka, IBM, NYC, NY, United States

Track Co-Organizer: Virendra Jadhav, Microsoft, Seattle, WA, United States, Jiantao Zheng, Qualcomm, San Diego, CA, United States, Hideo Miura, Tohoku University, Sendai, Japan, Pradeep Lall, Auburn University, Auburn, AL, United States

14-3
Overmold Compounds, Adhesives, Underfills, Seals, Thermal Interface and Heat Spreader Materials

14-3-1
Underfills and CTE Effects

Diplomat 2:45pm - 4:15pm

Session Organizer: Marie-Claude Paquet, IBM Canada, Bromont, QC, Canada

Session Co-Organizer: Hiroyuki Mori, IBM Japan, Ltd., Kawasaki, Kanagawa, Japan

Experimental Characterization of Underfill Materials Exposed to Moisture Including Preconditioning

InterPACK Technical Paper Publication: InterPACKICNMM2015-48622

Promod Chowdhury, Nusrat Chhanda, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Pradeep Lall, Auburn University, Auburn, AL, United States

Underfill Design Using FEM for FC-BGA, FC-CSP, and Moving Towards 2.5&3D

InterPACK Technical Presentation: InterPACKICNMM2015-48683

Brian Schmaltz, NAMICS, San Jose, CA, United States

Pre-Applied Inter Chip Fill for 3D-IC Chip Joining

InterPACK Technical Paper Publication: InterPACKICNMM2015-48738

Yasuhiro Kawase, Mitsubishi Chemical Corporation, Kitakyushu, Fukuoka, Japan, Makoto Ikemoto, Mitsubishi Chemical, Kitakyushu, Fukuoka, Japan, Hidehiro Yamamoto, Masaya Sugiyama, Mitsubishi Chemical Corporation, Kitakyushu, Fukuoka, Japan, Hideki Kiritani, Mitsubishi Chemical Corporation, Chiyoda-ku, Tokyo, Japan

Next Generation NCP Enables Advanced Flip-Chip Packaging

InterPACK Technical Presentation: InterPACKICNMM2015-48803

Rose Guino, Jie Cao, Ruihua Li, Gina Hoang, Henkel Electronic Materials LLC, Irvine, CA, United States

Effects of Low CTE Materials on Thermal Deformation of Organic Substrates in Flip Chip Package Application

InterPACK Technical Paper Publication: InterPACKICNMM2015-48741

Hiroyuki Mori, Sayuri Kohara, Keishi Okamoto, Hirokazu Noma, Kazushige Toriyama, IBM Japan, Ltd., Kawasaki, Kanagawa, Japan

MEMS AND NEMS

3-1
N/MEMS: Sensors, Actuators, & Resonators

3-1-4
RF MEMS

Mezzanine Level, Hunt Room 4:45pm - 6:15pm

Session Organizer: Matteo Rinaldi, Northeastern University, Boston, MA, United States

Session Co-Organizer: Songbin Gong, University of Illinois at Urbana Champaign, Urbana, IL, United States

Low Power MEMS-Enabled Wireless Transceivers

InterPACK Invited Presentation: InterPACKICNMM2015-48873

Clark T.-C. Nguyen, University of California at Berkeley, Berkeley, CA, United States

Solid-State MEMS in Standard ICs

InterPACK Invited Presentation: InterPACKICNMM2015-48580

Dana Weinstein, MIT, Cambridge, MA, United States

Reconfigurable Aluminum Nitride RF MEMS Resonators Using Monolithically Integrated Phase Change Material Switches

InterPACK Technical Presentation: InterPACKICNMM2015-48455

Gwendolyn Hummel, Yu Hui, Matteo Rinaldi, Northeastern University, Boston, MA, United States

Anchor Loss Suppression for AlN Lamb Wave Resonators

InterPACK Technical Presentation: InterPACKICNMM2015-48188

Jie Zou, University of California, Berkeley, Berkeley, CA, United States, C.-M. Lin, Silicon Laboratories, Inc., Sunnyvale, CA, United States, Albert Pisano, University of California, San Diego, Berkeley, CA, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-9
Two Phase Boiling Computational Modeling Challenges

5-9-2
Two Phase Boiling Computational Modeling Challenges 2

Mezzanine Level, International Room 4:45pm - 6:15pm

Session Organizer: Karthik Bodla, GE Global Research Center, Niskayuna, NY, United States

Session Co-Organizer: Fanghao Yang, IBM, Yorktown Heights,, NY, United States

Modeling and Simulation Challenges in Embedded Two Phase Cooling: DARPA's ICECool Program

InterPACK Technical Paper Publication: InterPACKICNMM2015-48334

Kaiser Matin, System Planning Corporation, Arlington, VA, United States, Avram Bar-Coen, DARPA/MTO, Arlington, VA, United States, Joseph Maurer, Booz Allen Hamilton, Arlington, VA, United States

ALE-FEM for Two-Phase Flows with Heat and Mass Transfer in Microchannels

InterPACK Technical Paper Publication: InterPACKICNMM2015-48441

Gustavo Anjos, Norberto Mangiavacchi, Jose Pontes, State University of Rio de Janeiro, Rio de Janeiro, Brazil, John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

Eulerian Multiphase Conjugate Model for Chip-Embedded Micro-Channel Flow Boiling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48489

Pritish Parida, IBM, Yorktown Heights, NY, United States, Hsin-Hua Tsuei, CAE Associates, Middlebury, CT, United States, Timothy Chainer, IBM, Yorktown Heights, NY, United States

Numerical Study of Bubble Instability during Microchannel Flow Boiling

ICNMM Technical Paper Publication: InterPACKICNMM2015-48645

Matthew Blomquist, Arman Khalighi, Abhijit Mukherjee, California State University Northridge, Northridge, CA, United States

A Numerical Study of Pulsating Heat Pipe Performance

InterPACK Technical Paper Publication: InterPACKICNMM2015-48350

Brian D'entremont, EPFL, Lausanne, Switzerland, John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

ADVANCED FABRICATION AND MANUFACTURING

7-5
3D Additive Manufacturing

7-5-2
Additive Manufacturing for Thermal Applications

Mezzanine Level, Far East Room 4:45pm - 6:15pm

Session Organizer: Ercan Dede, Toyota Research Institute of North America, Ann Arbor, MI, United States

Session Co-Organizer: Scott Thompson, Mississippi State University, Starkville, MS, United States

Topology Optimization, Additive Layer Manufacturing, and Experimental Testing of an Air-Cooled Heat Sink

InterPACK Technical Paper Publication: InterPACKICNMM2015-48027

Ercan Dede, Toyota Research Institute of North America, Ann Arbor, MI, United States, Shailesh Joshi, Toyota, Ann Arbor, MI, United States, Feng Zhou, Toyota Research Institute of North America, Ann Arbor, MI, United States

Review of Most Recent Progress on Development of Polymer Heat Exchangers for Thermal Management Applications

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48637

David C. Deisenroth, Martinus Adrian Arie, University of Maryland, College Park, College Park, MD, United States, Serguei Dessiatoun, University of Maryland, Colmar Manor, MD, United States, Amir Shooshtari, Michael Ohadi, University of Maryland, College Park, MD, United States, Avram Bar-Cohen, University of Maryland at College Park, College Park, MD, United States

3D Additive Nanomanufacturing on the Anodized Aluminum Oxide Membrane for Capturing Solar Energy

ICNMM Technical Presentation: InterPACKICNMM2015-48643

Sang Hoon Nam, Yoonkyung Lee, MIT, Cambridge, MA, United States, Jin You Lu, TieJun Zhang, Masdar Institute of Science and Technology, Abu Dhabi, Abu Dhabi, United Arab Emirates, Nicholas Fang, MIT, Cambridge, MA, United States

Additively-Manufactured Ti-6Al-4V Oscillating Heat Pipe with Multiple Channel Layers

InterPACK Technical Presentation: InterPACKICNMM2015-48817

Scott Thompson, Omar Ibrahim, John Monroe, Nima Shamsaei, Linkan Bian, Mississippi State University, Starkville, MS, United States, Alaa Elwany, Texas A & M University, College Station, TX, United States

Additively Manufactured Thin-Walled Polymer Heat Exchangers

ICNMM Technical Presentation: InterPACKICNMM2015-48150

Christopher S. Roper, Randall C. Schubert, David Page, Christopher J. Ro, HRL Laboratories, LLC, Malibu, CA, United States

9-1
Panel Topics

9-1-8
Women in Technology Panel

Lobby Level, Pavilion Room 4:45pm - 6:15pm

Session Organizer: Amy Fleischer, Villanova University, Villanova, PA, United States

Session Co-Organizer: Debbie G. Senesky, Stanford University, Stanford, CA, United States

Panelists:

Dr. Tsu-Jae King Liu, Chair, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley

Dr. Niru Kumari, Senior Research Scientist, Systems Research Lab, HP Labs

Evelyn N. Wang, Associate Professor, Mechanical Engineering Department, MIT

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-8
Microfluidic Enabling Technology for Material Synthesis and Cell Assays

Lobby Level, Empire Room 4:45pm - 6:15pm

Session Organizer: Carolyn Ren, University of Waterloo, Waterloo, ON, Canada

Microfluidic Self Assembly

InterPACK Invited Presentation:InterPACKICNMM2015-48846

Patrick Tabeling, MMN ESPCI, Paris, France

Micro-Structuring for Cell-Based Applications

InterPACK Invited Presentation: InterPACKICNMM2015-48847

Dirk Janasek, Leibniz-Institut für Analytische Wissenschaften - ISAS E.V, Dortmund, Germany

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

14-3
Overmold Compounds, Adhesives, Underfills, Seals, Thermal Interface and Heat Spreader Materials

14-3-2
Thermal Interface Materials and Adhesives

Arcade Level, Diplomat Room 4:45pm - 6:15pm

Session Organizer: Taryn Davis, IBM, Hopewell Junction, NY, United States

Session Co-Organizer: Marie-Claude Paquet, IBM Canada, Bromont, QC, Canada

Adhesion Strength Characterization for Drop Impact Reliability

InterPACK Technical Presentation: InterPACKICNMM2015-48166

Namseo Goo, Ngoc San Ha, Thanh Duc Dao, Konkuk University, Seoul, Korea (Republic), Jae Kwak, Samsung Electronics Co., Ltd., Suwon, Korea (Republic), Soonwan Chung, Samsung Electronics Co., Ltd., Suwon-si, Korea (Republic)

Effect of Temperature Cycling and High Temperature Aging on the Elastic Properties and Failure Modes of Thermal Interface Materials

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48712

Taryn Davis, IBM, Hopewell Junction, NY, United States, Tuhin Sinha, Kenneth Marston, Sushumna Iruvanti, IBM, Hopewell Junction, NY, United States

Temperature Induced Bond Healing Thermoplastic TIM

InterPACK Technical Presentation: InterPACKICNMM2015-48786

Sean Orzolek, Jason L. Strader, Richard F. Hill Ph.D, Laird, Cleveland, OH, United States

Thermomechanical Reliability of Sintered-Silver Interface Materials

InterPACK Technical Presentation: InterPACKICNMM2015-48517

Douglas DeVoto, Paul Paret, National Renewable Energy Laboratory, Golden, CO, United States

A Compliance-Based Approach to Study Fatigue Crack Propagation for a Copper-Epoxy Interface

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48447

David Samet, Abhishek Kwatra, Georgia Institute of Technology, Atlanta, GA, United States, Suresh Sitaraman, Georgia Institute of Technology, Atlanta, GA, United States

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-1
Low Dimensional Materials Characterization & Applications

Lobby Level, French Room 4:45pm - 6:45pm

Session Organizer: Satish Kumar, Georgia Institute of Technology, Atlanta, GA, United States

Percolation Doping and Copercolating Transport in Graphene and CNT Networks

InterPACK Invited Presentation: InterPACKICNMM2015-48135

Muhammad Alam, Purdue University, West Lafayette, IN, United States

Thermal Transport Properties and Thermal Management Prospect of Two-dimensional Layered Materials

InterPACK Invited Presentation: InterPACKICNMM2015-48810

Li Shi, University of Texas, Austin, TX, United States

Thermoelectric Power Factor in Low-dimensional Systems

InterPACK Invited Presentation: InterPACKICNMM2015-48866

Heiner Linke, Lund University, Lund, Sweden

MINI WORKSHOPS, STUDENT POSTER COMPETITION AND TUTORIALS

11-4
Tutorials

11-4-3
Tutorials: Thermofluid Characteristics of High Vapor Fraction Microgap Flow in Embedded Cooling Configurations

Mezzanine Level, California Room 4:45pm - 6:45pm

Thermofluid Characteristics of High Vapor Fraction Microgap Flow

InterPACK Invited Presentation: InterPACKICNMM2015-48898

Avram Bar-Cohen, University of Maryland at College Park, College Park, MD, United States

Thermofluid Characteristics of High Vapor Fraction Microgap Flow

InterPACK Invited Presentation: InterPACKICNMM2015-48899

Amir Riaz, UMD, College Park, MD, United States

11-4-4
Tutorial: Thermal Management of LED Devices and Systems

Lobby Level, Garden Room 4:45pm - 6:45pm

Thermal Management of LED Devices and Systems

InterPACK Invited Presentation: InterPACKICNMM2015-48897

Karl Geisler, 3M, St. Paul, MN, United States

MINI WORKSHOPS, STUDENT POSTER COMPETITION AND TUTORIALS

11-3
Workshop: ASME Journal of Electronics Packaging (JEP)

11-3-1
Forum on the Journal of Electronic Packaging (JEP Forum)

Lobby Level, French Room 6:15pm - 7:45pm

- 6:15 to 6:25pm:
  Introduction to ASME Journal of Electronic Packaging, Y. C. Lee, University of Colorado Boulder, USA.
- 6:25 to 6:45pm:
  Japanese research activities for electronic packaging by JSME and related societies, Toru Ikeda, Kagoshima University, Japan.
- 6:45 to 7:05pm:
  Virtual international research institute on two-phase flow and heat transfer, John R. Thome, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.
- 7:05 to 7:25pm:
  Avram Bar-Cohen, DARPA Thermal Management Technology Program, Defense Advanced Research Projects Agency, USA.
- 7:25 to 7:45pm:
  General discussion on the future of Journal of Electronic Packaging

Wednesday, July, 08

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-2
Advances in 2.5D, 3D and Stacked Packaging

1-2-1
TSVs in 2.5D and 3D Packaging

Mezzanine Level, Far East Room 7:45am - 9:15am

Session Organizer: Debendra Mallik, Intel Corporation, Chandler, AZ, United States

Session Co-Organizer: Herb Reiter, Eda 2 Asic Consulting, Inc, Los Altos, CA, United States

Reliability Implications of Thermo-mechanically and Electrically Induced Interfacial Sliding of Through-Silicon Vias in 3D Packages

InterPACK Technical Paper Publication: InterPACKICNMM2015-48124

Lutz Meinshausen, Ming Liu, Washington State University, Pullman, WA, United States, Tae Kyu Lee, Cisco Systems Inc, San Jose, CA, United States, Indranath Dutta, Washington State University, Pullman, WA, United States, Li Li, Cisco systems, San Jose, CA, United States

Thermal Design Analysis of 2.5-D Packages with Analytical TSV Submodels

InterPACK Technical Paper Publication: InterPACKICNMM2015-48088

H.Y. Zhang, Shanghai University Engineering Sciences, Shanghai, China, W.H. Zhu, Central South University., Changsha, China, Leon Lin, National Center for Advanced Packaging, Wuxi, China, Xiao Yan, Shanghai University Engineering Sciences, Shanghai, China

Analysis of Interfacial Shear Stress and Risk of Debonding in TSVs

InterPACK Technical Paper Publication: InterPACKICNMM2015-48656

Anirudh Udupa, Ganesh Subbarayan, Purdue University, West Lafayette, IN, United States, Cheng-Kok Koh, Purdue University, West Lafayette, IN, United States

Chip Package Interaction Study to Analyze the Mechanical Integrity of a 3-D TSV Package using Compact Modeling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48811

Pavan Rajamane, The University of Texas, Arlington, Arlington, TX, United States, Fahad Mirza, EMNSPC - UT Arlington, Arlington, TX, United States, Hassaan Khan, The University of Texas, Arlington, Arlington, TX, United States, Dereje Agonafer, University of Texas at Arlington, Arlington, TX, United States

EMERGING TECHNOLOGY FRONTIERS

2-1
Thermal Management: Mobile Applications

2-1-1
Advanced Modeling Solutions for Mobile Thermal Management

Lobby Level, Green Room 7:45am - 9:15am

Session Organizer: Don Le, Qualcomm, San Diego, CA, United States

Session Co-Organizer: Banafsheh Barabadi, MIT, Cambridge, MA, United States

Correlated OLED Thermal Modeling Methods and Thermal Design Recommendations

InterPACK Technical Paper Publication: InterPACKICNMM2015-48769

Carin Ruiz, Intel Corporation, Santa Clara, CA, United States

Users-Thermal Response to a Simulated Tablet Computer Surface

InterPACK Technical Paper Publication: InterPACKICNMM2015-48787

Han Zhang, Alan Hedge, Cornell University, Ithaca, NY, United States, Beiyuan Guo, Beijing Jiaotong University, Beijing, Beijing, China

Development of Heat Transfer Tools for Sizing Flexible Graphite Spreaders in Mobile Applications

InterPACK Technical Paper Publication: InterPACKICNMM2015-48523

Rick Beyerle, Gary Shives, GrafTech, Brooklyn Heights, OH, United States

Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48367

Tannaz Harirchian, Intel Corporation, Chandler, AZ, United States, Zuyang Liang, Intel Corporation, Portland, OR, United States, Michael Schroeder, Kyle Yazzie, Ashish Gupta, Intel Corporation, Chandler, AZ, United States, Alan C Mcallister, Intel, Hillsboro, OR, United States

Ultra Thin-Light Titanium Based Thermal Solution for Portable Electronic Devices

InterPACK Technical Presentation: InterPACKICNMM2015-48831

Payam Bozorgi, George Fleischman, Carl Meinhart, PiMEMS, Inc, Santa Barbara, CA, United States

MEMS AND NEMS

3-3
N/MEMS: Fabrication, Integration, Packaging, Test & Reliability

3-3-1
Advanced Fabrication, Packaging, & Assembly Technology

Arcade Level, Diplomat Room 7:45am - 9:15am

Session Organizer: Babak Jamshidi, STATS ChipPAC, Fremont, CA, United States

Session Co-Organizer: David Garmire, University of Hawaii, Honolulu, HI, United States

Inductive Coupled Plasma Etching of High Aspect Ratio Silicon Carbide Microchannels for Localized Cooling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48409

Karen Dowling, Ateeq Suria, Stanford University, Stanford, CA, United States, Yoonjin Won, Stanford University, Palo Alto, CA, United States, Ashwin Shankar, Hyoungsoon Lee, Stanford University, Stanford, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States, Debbie G. Senesky, Stanford University, Stanford, CA, United States

Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48611

Azadeh Moini, Stanford University, Stanford, CA, United States, Amin Nikoozadeh, Jung Woo Choe, Stanford, Stanford, CA, United States, Chienliu Chang, Canon, Tokyo, Japan, Doug Stephens, UC Davis, Davis, CA, United States, Lowell S. Smith, GE Global Research, Niskayuna, NY, United States, David Sahn, OHSU, Portland, OR, United States, Butrus T Khuri-Yakub, Stanford, Stanford, CA, United States

Atomic layer Deposited TiO2 as Sacrificial Layers and Internal Coatings for Nanoscale Gaps

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48814

Li-Anne Liew, Ching-Yi Lin, University of Colorado Boulder, Boulder, CO, United States, Alexander Yersak, University of Colorado at Boulder, Boulder, CO, United States, Ryan J., Lewis, University of Colorado Boulder, Boulder, CO, United States, Collin Coolidge, Yung Cheng Lee, University of Colorado, Boulder, CO, United States

Vibration Displacement Measurements of an Air Gap Below a Fixed, Transparent, and Solid Surface with Spectral Reflectometry

InterPACK Technical Presentation: InterPACKICNMM2015-48450

Alexander Yersak, University of Colorado Boulder, Boulder, CO, United States, Yung Cheng Lee, University Of Colorado, Boulder, CO, United States

Design and Fabrication of a Polyimide Based MEMS Single Refrigerant Joule-Thomson Micro Cooler

InterPACK Technical Presentation: InterPACKICNMM2015-48768

Collin Coolidge, University of Colorado, Boulder, CO, United States, Ray Radebaugh, National Institute of Standards and Technology, Boulder, CO, United States, Li-Anne Liew, Yizi Xu, University of Colorado Boulder, Boulder, CO, United States, Yung Cheng Lee, University Of Colorado, Boulder, CO, United States, Victor Bright, University of Colorado Department of Mechanical Engineering, Boulder, CO, United States, Peter Bradley, National Institute of Standards and Technology, Boulder, CO, United States, Ching-Yi Lin, University of Colorado Boulder, Boulder, CO, United States

THERMAL MANAGEMENT

4-2
Rack Level Thermal Management

4-2-1
Air Cooling Approaches and Components

Lobby Level, Garden Room 7:45am - 9:15am

Session Organizer: Vadim Gektin, Huawei, Santa Clara, CA, United States

Session Co-Organizer: Tianyi Gao, SUNY Binghamton University, Binghamton, NY, United States

An Investigation into Performance Characteristics of an Axial Flow Fan Using CFD for Electronic Devices

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48024

Hafiz Muhammad Hashim, Mehmet Arik, Ozyegin University, Istanbul, Turkey, Murat Parlak, Aselsan, Ankara, Turkey, Baris Dogruoz, Cisco, San Jose, CA, United States

Thermal Management/Roadmap and Energy Efficiency of Telecommunication Equipment

InterPACK Technical Presentation: InterPACKICNMM2015-48056

Lian-Tuu Yeh, Thermal Consultants, Dallas, TX, United States

Thermal Management in Rack Scale Computing System with Shared Power and Shared Cooling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48250

Chuan Song, Haifeng Gong, Chun Wang, Intel, Shanghai, China, Nishi Ahuja, Intel Corporation, Seattle, WA, United States, Xiang Zhou, Intel, Shanghi, China, Gabriel C Cox, Intel, Hillsboro, OR, United States

Flow Resistance Network Analysis in Fan-Cooled High-Density Packaging Electronic Equipment

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48600

Takashi Fukue, Japan/Iwate University, Morioka, Japan, Tomoyuki Hatakeyama, Toyama Prefectural University, Imizu, Toyama, Japan, Masaru Ishizuka, Toyama Prefectural University, Toyama, Japan, Koichi Hirose, Kazuma Obata, Iwate University, Morioka, Japan, Katsuhiro Koizumi, Cosel Co. Ltd., Toyama, Japan

Rack Server Solution in Data Center

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48258

Sheng Kang, Baidu, Beijing, China, Guofeng Chen, Baidu, Beijing, China, Chun Wang, Ruiquan Ding, Jiajun Zhang, Baidu, Beijing, China, Nishi Ahuja, Intel Corporation, Seattle, WA, United States, Pinyan Zhu, Chao Liu, Baidu, Beijing, China

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-1
Single Phase Cooling Fundamentals

5-1-1
Single Phase Cooling Fundamentals

Mezzanine Level, California Room 7:45am - 9:15am

Session Organizer: David Copeland, Oracle, Santa Clara, CA, United States

Session Co-Organizer: Poh-seng Lee, National University of Singapore, Singapore

Optimization of a Microchannel Geometry for Cooling High Heat Flux Microelectronics using Numerical Simulations

InterPACK Technical Paper Publication: InterPACKICNMM2015-48123

Sebastian Scholl, Stanford University, Stanford, CA, United States, Catherine Gorle, Columbia University, New York, NY, United States, Farzad Houshmand, Stanford University, Stanford, CA, United States, Tom Verstraete, Von Karman Institute for Fluid Dynamics, Rhode St.-Genese, Belgium, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

Thermal Transport Analysis in Metal Foam Heat Sink with LTE and LTNE Models

ICNMM Technical Paper Publication: InterPACKICNMM2015-48214

Liang Gong, China University of Petroleum, Qingdao, Shandong, China, Yongtong Li, Minghai Xu, China University of Petroleum (Huadong), Qingdao, China

Development and Analysis of Micro-Channel Heat Exchangers for Natural Gas Cooling

ICNMM Technical Paper Publication: InterPACKICNMM2015-48515

Shyam Menon, Himakar Ganti, Oregon state University, Bend, OR, United States, Hailei Wang, Oregon State University, Corvallis, OR, United States, Chris Hagen, Oregon State University, Bend, OR, United States

Inverse Design of Cooling of Electronic Chips Subject to Specified Hot Spot Temperature and Coolant Inlet Temperature

InterPACK Technical Paper Publication: InterPACKICNMM2015-48346

Sohail R. Reddy, Florida International University, Miami, FL, United States, George S. Dulikravich, Florida International University, Miami, FL, United States

Thermal Performance and Pressure Drop of Galinstan-Based Microchannel Heat-Sink for High Heat-Flux Thermal Management

ICNMM Technical Paper Publication: InterPACKICNMM2015-48404

Yoshikazu Hayashi, Navid Saneie, Yoon Jo Kim, Jong-Hoon Kim, Washington State University Vancouver, Vancouver, WA, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-2
Two Phase Flows

6-2-1
Two Phase Flow in Microchannels and Minichannels

Mezzanine Level, International Room 7:45am - 9:15am

Session Organizer: Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada

Session Co-Organizer: Rui Qiao, Virginia Tech, Blacksburg, VA, United States

An Improved Correlation for Void Fraction During In-tube Condensation

ICNMM Technical Paper Publication: InterPACKICNMM2015-48251

Cong Guo, Tao Wang, Yu Yan Jiang, Institute of Engineering Thermophysics, Chinese Academy of Sciences, Beijing, China, Chaohong Guo, Institute of Engineering Thermophysics, CAS, Beijing, China, Miao Zeng, Institute of Engineering Thermophysics, Chinese Academy of Sciences, Beijing, China, Dong Yu, Dawei Tang, Institute of Engineering Thermophysics, CAS, Beijing, China

Thermodynamic Analysis of the Transition between Slug and Annular Flow in Minichannels

ICNMM Technical Paper Publication: InterPACKICNMM2015-48555

Dolaana Khovalyg, University of Illinois at Urbana-Champaign, Urbana, IL, United States, Predrag Hrnjak, Anthony Jacobi, University of Illinois, Urbana, IL, United States

Pressure Drop for Single-and Two-Phase Flows through a Return Bend in Horizontal Rectangular Microchannel and Minichannel

ICNMM Technical Paper Publication: InterPACKICNMM2015-48721

Akimaro Kawahara, Kumamoto University, Kumamoto, Japan, Michio Sadatomi, Kumamoto University, Kumamoto, Japan, Shinichi Miyagawa, Kumamoto University, Kumamoto, Japan, Mohamed H. Mansour, Mansoura University, Mansoura, Egypt

The Motion of Long Drops In Rectangular Microchannels at Low Capillary Numbers

ICNMM Technical Presentation: InterPACKICNMM2015-48270

Sai Sashankh Rao, Harris Wong, Louisiana State University, Baton Rouge, LA, United States

Gas-water Two Phase Transport in Microchannels

InterPACK Technical Presentation: InterPACKICNMM2015-48760

Wenming Li, Tamanna Alam, University of South Carolina, Columbia, SC, United States, Fanghao Yang, IBM, Yorktown Heights,, NY, United States, Chen Li, University of South Carolina, Columbia, SC, United States

6-4
Pool Boiling and Condensation

6-4-1
Condensation

Mezzanine Level, Hunt Room 7:45am - 9:15am

Session Organizer: Matthew McCarthy, Drexel University, Philadelphia, PA, United States

Session Co-Organizer: Amy Betz, Kansas State University, Manhattan, KS, United States

Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces

ICNMM Technical Presentation: InterPACKICNMM2015-48116

Xiaopeng Qu, Duke University, Durham, NC, United States, Jonathan Boreyko, Virginia Tech, Blacksburg, VA, United States, Fangjie Liu, Duke University, Durham, NC, United States, Rebecca Agapov, Arlon Med, Philadelphia, PA, United States, Nick Lavrik, Oak Ridge National Laboratory, Oak Ridge, TN, United States, Scott T. Retterer, Oak Ridge National Laboratory, Oak Ridge, TN, United States, James J. Feng, University of British Columbia, Vancouver, BC, Canada, Patrick Collier, Oak Ridge National Laboratory, Oak Ridge, TN, United States, Chuan-Hua Chen, Duke University, Durham, NC, United States

Enhancing the Coalescence-Induced Jumping Droplet Velocity via Multi-Droplet Coalescence

InterPACK Technical Presentation: InterPACKICNMM2015-48230

Moon-Kyung Kim, Hyeongyun Cha, Yuehan Xu, Chen Zhong, Nenad Miljkovic, University of Illinois at Urbana-Champaign, Urbana, IL, United States

Controlling the Growth of Condensation and Frost with Chemical Micropatterns

ICNMM Technical Presentation: InterPACKICNMM2015-48336

Jonathan Boreyko, Virginia Tech, Blacksburg, VA, United States, Ryan R. Hansen, University of Tennessee, Knoxville, TN, United States, Kevin R. Murphy, Virginia Tech, Blacksburg, VA, United States, Scott T. Retterer, Patrick Collier, Oak Ridge National Laboratory, Oak Ridge, TN, United States

Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces

ICNMM Technical Paper Publication: InterPACKICNMM2015-48459

Anton Hassebrook, Michael J. Lucis, Jeffrey E. Shield, Craig Zuhlke, University of Nebraska-Lincoln, Lincoln, NE, United States, Troy Anderson, Dennis R. Alexander, University of Nebraska - Lincoln, Lincoln, NE, United States, George Gogos, Sidy Ndao, University of Nebraska-Lincoln, Lincoln, NE, United States

Hydrophobic Rare-earth Oxide Ceramics and their Application in Sustained Dropwise Condensation

ICNMM Technical Presentation: InterPACKICNMM2015-48743

Sami Khan, Massachusetts Institute of Technology, Cambridge, MA, United States, Gisele Azimi, University of Toronto, Toronto, ON, Canada, Karim Khalil, MIT, Cambridge, MA, United States, Adam Paxson, MIT Department of Mechanical Engineering, Cambridge, MA, United States, Kripa K. Varanasi, MIT, Cambridge, MA, United States

6-7
Electrokinetic Flows

6-7-1
Advances In Electrokinetics and Electrophoresis

Lobby Level, Empire Room 7:45am - 9:15am

Session Organizer: Cullen Buie, Massachusetts Institute of Technology, Cambridge, MA, United States

Session Co-Organizer: Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

Stability Analysis of Oscillating Electrolytes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48075

Prateek Gupta, Supreet Singh Bahga, Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi, Delhi, India

Effect of Surface Conduction on Propagation of Ion-Concentration Shock Waves in Isotachophoresis

ICNMM Technical Paper Publication: InterPACKICNMM2015-48089

Mayank Khichar, Romir Moza, Supreet Singh Bahga, Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi, Delhi, India

Parametric Study of Dielectrophoretic Interactive Motion of Particles

ICNMM Technical Paper Publication: InterPACKICNMM2015-48343

Mohammad Hossan, University of Central Oklahoma, Edmond, OK, United States, Matthew Benton, University of Central Oklahoma, Edmond, OK, United States, Prashanta Dutta, Robert Dillon, Washington State University, Pullman, WA, United States

Use of a Separability Parameter for the Design of a High Frequency Dielectrophoresis Cell Sorter Device

ICNMM Technical Paper Publication: InterPACKICNMM2015-48528

Hanieh Hadady, Sage Hiibel, Doug Redelman, University of Nevada, Reno, Reno, NV, United States, Emil Geiger, UNR, Reno, NV, United States

Self-Assembly of Colloidal Particles Driven by Poiseuille and Electrosmotic Flow

ICNMM Technical Presentation: InterPACKICNMM2015-48355

Necmettin Cevheri, Georgia Institute of Technology, Atlanta, GA, United States, Minami Yoda, Georgia Institute of Technology, Atlanta, GA, United States

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-2
Power Electronics and Electric Machines

Lobby Level, French Room 7:45am - 9:15am

Session Organizer: Sreekant Narumanchi, National Renewable Energy Laboratory, Golden, CO, United States

Session Co-Organizer: Juan Rivas, Stanford University, Stanford, CA, United States

Recent Advances in Automotive Power Electronics and Electric Machines at Oak Ridge National Laboratory

InterPACK Technical Presentation: InterPACKICNMM2015-48703

Burak Ozpineci, Oak Ridge National Laboratory, Knoxville, TN, United States

Implications of High Heat Fluxes on Cold Plate Design for Automotive Electronics

InterPACK Technical Presentation: InterPACKICNMM2015-48028

Ercan Dede, Toyota Research Institute of North America, Ann Arbor, MI, United States, Shailesh Joshi, Toyota, Ann Arbor, MI, United States

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-2
Advances in 2.5D, 3D and Stacked Packaging

1-2-2
Packaging Challenges in 2.5D/3D and Stacked Packaging

Mezzanine Level, Far East Room 9:30am - 11:00am

Session Organizer: Niru Kumari, Hewlett-Packard, Palo Alto, CA, United States

Session Co-Organizer: Keiji Matsumoto, IBM Research-Tokyo, Tokyo, Japan

Fracture Mechanisms in Sn-Ag-Cu Solder Micro-Bumps for 3D Microelectronic Packages

InterPACK Technical Paper Publication: InterPACKICNMM2015-48125

Babak Talebanpour, Indranath Dutta, Washington State University, Pullman, WA, United States

Improvement of Thermal Conductivity of Electroplated Copper Interconnections by Controlling Their Crystallinity

InterPACK Technical Paper Publication: InterPACKICNMM2015-48197

Masaru Gotoh, Ken Suzuki, Tohoku University, Sendai, Miyagi, Japan, Hideo Miura, Tohoku University, Sendai, Japan

Attributes of Advanced Thinning and Planarization Processes in 2.5D and 3D Packaging Recognized by Market Demands

InterPACK Technical Paper Publication: InterPACKICNMM2015-48387

Frank Wei, Disco Corporation, Ota-Ku, Tokyo, Japan

Warpage Hysteresis Estimation of an Electronic Package during a Thermal Cycle

InterPACK Technical Paper Publication: InterPACKICNMM2015-48168

Toru Ikeda, Akiko Ozaki, Kagoshima University, Kagoshima, Japan, Takuya Hatao, Sumitomo Bakelite Co. Ltd., Utsunomiya, Tochigi, Japan, Noriyuki Miyazaki, Kyoto University, Fukutsu, Fukuoka, Japan

Improvement of the Long-Term Reliability of Interconnection by Controlling the Crystallinity of Grain Boundaries

InterPACK Technical Paper Publication: InterPACKICNMM2015-48200

Takahiro Nakanishi, Ken Suzuki, Tohoku University, Sendai, Miyagi, Japan, Hideo Miura, Tohoku University, Sendai, Japan

1-6
Harsh Environments and High Temperature electronics

1-6-4
Temperature Cycling and Aging

Arcade Level, Diplomat Room 9:30am - 11:00am

Session Organizer: Milena Vujosevic, Intel Corporation, Folsom, CA, United States

Session Co-Organizer: Patrick McCluskey, University of Maryland, College Park, MD, United States

Microstructural Stability of Au-Sn SLID Joints for Harsh Environments

InterPACK Technical Paper Publication: InterPACKICNMM2015-48323

Pedro Quintero, Paola Rivera Soto, Mellyssa Mulero, University of Puerto Rico-Mayaguez, Mayaguez, PR, United States, Dimeji Ibitayo, US Army Research Laboratory, Adelphi, MD, United States

High Temperature Shear Strength of Cu-Sn Transient Liquid Phase Sintered Interconnects

InterPACK Technical Paper Publication. InterPACKICNMM2015-48577

Hannes Greve, Seyed Ali Moeini, CALCE/University of Maryland, College Park, MD, United States, Patrick McCluskey, University of Maryland, College Park, MD, United States, Shailesh Joshi, Toyota, Ann Arbor, MI, United States

Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints during Thermal Cycling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48009

Chaobo Shen, Cong Zhao, Auburn University, Auburn, AL, United States, Zhou Hai, Reliability Engineering Nvidia Corporation, Santa Clara, CA, United States, Jiawei Zhang, Broadcom Corporation, Irvine, CA, United States, Michael Bozack, John Evans, J. C. Suhling, Auburn University, Auburn, AL, United States

Physics based Requirements for Qualification of BGA Components in Temperature Cycling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48578

Ru Han, Intel, Chandler, AZ, United States, Milena Vujosevic, Intel Corporation, Folsom, CA, United States, Min Pei, Intel, Hillborough, OR, United States

FEA Based Reliability Predictions for PBGA Packages Subjected to Isothermal Aging Prior to Thermal Cycling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48620

Munshi Basit, Mohammad Motalab, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, John Evans, Pradeep Lall, Auburn University, Auburn, AL, United States

EMERGING TECHNOLOGY FRONTIERS

2-1
Thermal Management: Mobile Applications

2-1-2
Advanced Technologies for Mobile Thermal Management

Lobby Level, Green Room 9:30am - 11:00am

Session Organizer: Tannaz Harirchian, Intel Corporation, Chandler, AZ, United States

Session Co-Organizer: Victor Chiriac, Qualcomm Inc, San Diego, CA, United States

A Method for Thermal Performance Characterization of Ultra-Thin Vapor Chambers Cooled by Natural Convection

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48175

Gaurav Patankar, Simone Mancin, Justin A. Weibel, Purdue University, West Lafayette, IN, United States, Mark A. MacDonald, Intel Corporation, Hillsboro, OR, United States, Suresh V. Garimella, Purdue University, West Lafayette, IN, United States

Thermal Effects of Mobile and Wearable Electronics on the Human Body

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48331

Zhizhu He, Technical Institute of Physics and Chemistry, Beijing, China, Jing Liu, Chinese Academy of Sciences, Beijing, China

A Novel Flow Visualization Technique Applied to a Closed Loop Pulsating Heat Pipe

InterPACK Technical Presentation: InterPACKICNMM2015-48108

Giulia Spinato, Navid Borhani, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland, John Thome, Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland

Thermal Management of Portable Electronic Devices Utilizing Latent Heat Sink (LHS) Materials

InterPACK Technical Presentation: InterPACKICNMM2015-48360

Mark Hartmann, Outlast Technologies LLC, Golden, CO, United States

Latent Heat Storage Based Thermal Management Materials for Lithium-ion Batteries

ICNMM Technical Presentation: InterPACKICNMM2015-48385

Joe Kelly, Outlast Technologies, Golden, CO, United States

2-4
Power Electronics and Electric Machines

2-4-1
Advances in Packaging and Characterization

Lobby Level, French Room 9:30am - 11:00am

Session Organizer: Juan Rivas, Stanford University, Stanford, CA, United States

Session Co-Organizer: Thomas J Dusseault, GE Global Research, Niskayuna, NY, United States

System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles

InterPACK Invited Paper Publication: InterPACKICN-MM2015-48602

Kraig J. Olejniczak, Tom Flint, David Simco, Sergei Storkov, Brad McGee, Kenny George, Peter Killeen, Austin Curbow, Robert S. Shaw, Brandon Passmore, Ty R. McNutt, APEI, Fayetteville, AR, United States

Design Consideration of Packaging a High Voltage Current Switch

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48714

Ankan De, Adam Morgan, North Carolina State University, Raleigh, NC, United States, Subhashish Bhattacharya, North Carolina State University, Raleigh, NC, United States, Douglas C. Hopkins, North Carolina State University, Raleigh, NC, United States

The Impact of Interfacial Layers on the Thermal Boundary Resistance and Residual Stress in GaN on Si Epitaxial Layers

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48259

Luke Yates, Thomas Bougher, Georgia Institute of Technology, Atlanta, GA, United States, Thomas Beechem, Sandia National Laboratories, Albuquerque, NM, United States, Baratunde Cola, Georgia Institute of Technology, Atlanta, GA, United States, Samuel Graham, Georgia Tech, Atlanta, GA, United States

Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe

InterPACK Technical Presentation: InterPACKICNMM2015-48818

Scott Thompson, John Monroe, Erick Vasquez, Mississippi State University, Starkville, MS, United States, Zachary Aspin, Mississippi State University, Sumrall, MS, United States, Matthew Berg, Mississippi State University, Starkville, MS, United States, Keisha Walters, MS State University, MS State, MS, United States

THERMAL MANAGEMENT

4-2
Rack Level Thermal Management

4-2-2
Hybrid & Liquid Cooling Approaches and Components

Lobby Level, Garden Room 9:30am - 11:00am

Session Organizer: Shlomo Novotny, Consultant, Boston, MA, United States

Session Co-Organizer: Takashi Fukue, Japan/Iwate University, Morioka, Japan

Experimentally Validated Numerical Model of a Fully- Enclosed Hybrid Cooled Server Cabinet

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48244

Kourosh Nemati, Husam Alissa, Binghamton University SUNY, Binghamton, NY, United States, Bruce Murray, Suny At Binghamton, Binghamton, NY, United States, Mark Seymour, Future Facilities, London, London, United Kingdom, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States

Enhancement of Water Cooling Performance in Narrow Flow Passages by Using Micro Heat Sinks With Miniature Vortex Generators

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48607

Kazuma Obata, Iwate University, Morioka, Japan, Takashi Fukue, Japan/Iwate University, Morioka, Japan, Koichi Hirose, Mamoru Kikuchi, Iwate University, Morioka, Japan, Yasuhiko Ueda, Shigeka-do Kusabuka, Tomoyasu Miyahara, Nakamura Mfg., Kamiina-gun, Japan

Evaluation of Cooling Technologies for High Performance Computing Systems

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48640

Suchismita Sarangi, Purdue University, West Lafayette, IN, United States, Will Kuhn, Oregon State, Corvallis, OR, United States, Scott Rider, Claude Wright, Shankar Krishnan, Intel Corporation, Hillsboro, OR, United States

Effect of Flow Guide Integration on the Thermal Performance of High Performance Liquid Cooled Immersion Server Modules

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48771

Joshua Gess, Auburn University, Auburn, AL, United States, Tyler Dreher, Auburn University, Auburn University, AL, United States, Sushil Bhavnani, Auburn University, Auburn, AL, United States, Wayne Johnson, Tennessee Technological University, Cookeville, TN, United States

Numerical and Experimental Characterization of the Transient Effectiveness of a Water to Air Heat Exchanger for Data Center Cooling Systems

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48377

Tianyi Gao, SUNY Binghamton University, Binghamton, NY, United States, Marcelo Del Valle, Alfonso Ortega, Villanova University, Villanova, PA, United States, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-3
Cold plate integration

5-3-1
Cold Plate Integration

Mezzanine Level, California Room 9:30am - 11:00am

Session Organizer: Mark North, Thermacore Inc, Lancaster, PA, United States

Session Co-Organizer: Ram Ranjan, UTRC, Hartford, CT, United States

Thermal Convection and Stress Analysis of the Cooling System for a Terahertz Radiation Detector

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48373

Angela Wu, Arturo Pacheco-Vega, California State University, Los Angeles, Los Angeles, CA, United States, Jeanette Cobian, University of California Riverside, Riverside, CA, United States

Experimental Investigation of a Cost Effective Skived Microchannel Cold Plate for Mass Production

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48460

Mark Steinke, Vinod Kamath, Lenovo, Morrisville, NC, United States

Theoretical (Ideal) Module Cooling and Module Cooling Effectiveness

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48324

Michael J. Ellsworth, Jr., IBM Corporation, Poughkeepsie, NY, United States, Levi A. Campbell, International Business Machines, Poughkeepsie, NY, United States

Lid-integral Cold Plate Topology Integration, Performance and Reliability.

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48427

Gerd Schlottig, IBM Zurich Research Laboratory, Zurich, Switzerland, Marco De Fazio, ST Microelectronics, Agrate Brianza, Italy, Werner Escher, IBM Research Laboratory Zurich, Rüschlikon, Switzerland, Paola Granatieri, ST Microelectronics, Agrate Brianza, Italy, Vijayeshwar D. Khanna, IBM Research, Yorktown Heights, NY, United States, Thomas Brunschwiler, IBM Research - Zurich, Rueschlikon, Switzerland

Measuring Moisture Leakage Out of Water Cooling Hardware

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48154

Prabjit Singh, IBM Corp, Poughkeepsie, NY, United States, Michael J. Ellsworth, Jr., IBM Corporation, Poughkeepsie, NY, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-2
Two Phase Flows

6-2-2
Flow Visualization of Two Phase Flows

Mezzanine Level, International Room 9:30am - 11:00am

Session Organizer: Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada

Session Co-Organizer: Rishi Raj, IIT Patna, Patna, India, Masahiro Kawaji, City College of New York, New York, NY, United States

A Photographic Study of Flow Boiling Stability on a Plain Surface with Tapered Manifold

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48464

Ankit Kalani, Satish Kandlikar, RIT, Rochester, NY, United States

Visualization of Confined Jet Impingement with Boiling using Time-Resolved Stereo-PIV

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48184

Matthew J. Rau, Tianqi Guo, Purdue University, West Lafayette, IN, United States, Pavlos P. Vlachos, Purdue University, West Lafayette, IN, United States, Suresh V. Garimella, Purdue University, West Lafayette, IN, United States

Visualization of Spray Structure at the Outlet of the Micro Orifices

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48304

Morteza Ghorbani, Ali Kosar, Sabanci University, Istanbul, Turkey

Quantitative Visualization of Vapor Bubble Growth in Diabatic Vapor-Liquid Microchannel Slug Flow

InterPACK Technical Paper Publicatio:. InterPACKICN-MM2015-48177

Todd A. Kingston, Justin A. Weibel, Purdue University, West Lafayette, IN, United States, Suresh V. Garimella, Purdue University, West Lafayette, IN, United States

Visualization of Two-Phase Flow through Microchannel Heat Exchangers

ICNMM Technical Paper Publication: InterPACKICNMM2015-48821

Dhruv Chanakya Hoysall, Khoudor Keniar, Georgia Institute of Technology, Atlanta, GA, United States, Srinivas Garimella, Georgia Institute of Technology, Atlanta, GA, United States

6-4
Pool Boiling and Condensation

6-4-2
Pool Boiling: Contact Line and Bubble Dynamics

Mezzanine Level, Hunt Room 9:30am - 11:00am

Session Organizer: Nenad Miljkovic, University of Illinois at Urbana-Champaign, Urbana, IL, United States

Session Co-Organizer: Vaibhav Bahadur, University of Texas at Austin, Austin, TX, United States

Heat Transfer during Evaporation and Boiling at the Three-Phase Contact Line Region- A Critical Review

ICNMM Technical Paper Publication: InterPACKICNMM2015-48481

Pruthvik Raghupathi, Satish Kandlikar, RIT, Rochester, NY, United States

Contact Angle of Vapor Bubble on Hydrophobic and Hydrophilic Surfaces in Pool Boiling

ICNMM Technical Presentation: InterPACKICNMM2015-48570

Ashish Chanana, An Zou, Amit Agrawal, Syracuse University, Syracuse, NY, United States, Peter Wayner, Rensselaer Polytechnic Inst, Troy, NY, United States, Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Experimental Verification of Analytical Prediction of Pool Boiling CHF Incorporating the Effects of EHD and Contact Angle

ICNMM Technical Paper Publication: InterPACKICNMM2015-48661

Ichiro Kano, Takahiro Sato, Naoki Okamoto, Yamagata University, Yonezawa, Japan

Observation of Bubble Dynamics and the Mechanism of the Boiling Crisis on Textured Hydrophilic Surfaces

ICNMM Technical Presentation: InterPACKICNMM2015-48796

Navdeep Singh Dhillon, Jacopo Buongiorno, Kripa K. Varanasi, MIT, Cambridge, MA, United States

6-7
Electrokinetic Flows

6-7-2
Fundamentals of Electrokinetic Flow

Lobby Level, Empire Room 9:30am - 11:00am

Session Organizer: Minami Yoda, Georgia Institute of Technology, Atlanta, GA, United States

Session Co-Organizer: Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

Electrokinetic Transport in Nanochannels Grafted with Polyelectrolyte With pH-Dependent Charge Density

ICNMM Technical Presentation: InterPACKICNMM2015-48246

Siddhartha Das, Guang Chen, University of Maryland, College Park, College Park, MD, United States

The Influence of Electroosmotic Flow on the von Kármán Vortex Street in the Wake of a Cylinder Located in a Microchannel

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48330

Mathias Scholz, Queen's University Fuel Cell Research Centre, Kingston, ON, Canada, Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

Study of the Transient Electroosmotic Flow of Maxwell Fluids in Square Cross-Section Microchannels

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48547

Juan P. Escandón, Edson M. Jiménez, Oscar E. Bautista, SEPI-ESIME Azc. Instituto Politécnico Nacional, Mexico, D. F., Mexico

Novel in-Plane Dielectrophoresis for Microfluidic Pattering of Densely Dispersed Particles with an Application in Electronic Paper Display

ICNMM Technical Presentation: InterPACKICNMM2015-48722

Qain Liang, Nanyang Technological University, Singapore, Singapore, Chun Yang, Nanyang Technological University, Singapore, Singapore

Effect of Hydrodynamic Slippage on Oscillating Electroosmotic Flows in Infinitely Extended Microcapillary

ICNMM Technical Paper Publication: InterPACKICNMM2015-48776

Guillermo Rojas, SEPI ESIME Azcapotzalco. Instituto Politécnico Nacional, Distrito Federal, Mexico, Oscar E. Bautista, SEPI-ESIME Azc. Instituto Politécnico Nacional, Mexico, D. F., Mexico, Federico Méndez, Universidad Nacional Autónoma de México, Mexico, D. F., Mexico

9-1
Panel Topics

9-1-3
Future outlook of M/NEMS technologies in Wearables and the Internet of Things (IoT)

Lobby Level, Pavilion Room 9:30am - 11:00am

Session Organizer: Albert P. Pisano, University of California, San Diego, La Jolla, CA, United States

Panelists:

Kurt Petersen, (retired)

Aaron Partridge, Founder and Chief Scientist of SiTime Corporation

Nicole Kerness, Executive Director of Maxim Integrated

Ariel Cao, CEO/Co-Founder InjectSense Inc.

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-6
Harsh Environments and High Temperature Electronics

1-6-1
Temperature, Moisture and Harsh Chemicals

Mezzanine Level, Far East Room 1:00pm - 2:30pm

Session Organizer: Abhijit Dasgupta, CALCE/University of Maryland, College Park, Maryland, MD United States

Session Co-Organizer: Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States

Measurement and Simulation of Moisture Induced Die Stresses in Flip Chip on Laminate Assemblies

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48626

Quang Nguyen, Jordan Roberts, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Richard Jaeger, Pradeep Lall, Auburn University, Auburn, AL, United States

Characterization of Die Stresses in Plastic Packages Subjected to Moisture and Thermal Exposures

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48627

Quang Nguyen, Jordan Roberts, M. Kaysar Rahim, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Richard Jaeger, Auburn University, Auburn, AL, United States

Computational Study of Behavior of Gas Absorption in Data Center Equipment and its Effects on the Rate of Corrosion/Contamination

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48049

Tejeshkumar Bagul, Kanan Pujara, Jimil M. Shah, Oluwaseun Awe, Dereje Agonafer, University of Texas at Arlington, Arlington, TX, United States

NanoThermoMechanical Memory: Near-Field Heat Transfer Enabled Negative Differential Thermal Resistance and Thermal Latching

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48351

Mahmoud Elzouka, Sidy Ndao, University of Nebraska-Lincoln, Lincoln, NE, United States

EMERGING TECHNOLOGY FRONTIERS

2-1
Thermal Management: Mobile Applications

2-1-3
Thermal Management of Mobile and Optoelectronic Devices

Lobby Level, Green Room 1:00pm - 2:30pm

Session Organizer: Tannaz Harirchian, Intel Corporation, Chandler, AZ, United States

Session Co-Organizer: Victor Chiriac, Qualcomm Inc, San Diego, CA, United States

Software Based Thermal Management in Mobile 3G/4G Devices

InterPACK Technical Presentation: InterPACKICNMM2015-48335

Kenan Kocagoez, Intel Corporation, Nürnberg, Bayern, Germany

Thermal Performance Enhancement of Glass Interposers

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48563

Sangbeom Cho, Yogendra Joshi, Georgia Institute of Technology, Atlanta, GA, United States

Graphene Modified Micro Heat Pipe for LED Modules

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48041

Yi Luo, School of Mechanical Engineering, Dalian University of Technology, Dalian, China, Liangliang Zou, Beike Yu, Chuanpeng Zhou, Dazhi Wang, Xiaodong Wang, Dalian University of Technology, Dalian, China

Approaches towards the Ultimate Luminous Output Power of Light-Emitting Diodes: Bottlenecks and Remedies

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48835

Xiaokun Zhang, Xiao-Dong Xiang, Yong Xiang, University of Electronic Science and Technology of China, Chengdu, Sichuan, China

2-4
Power Electronics and Electric Machines

2-4-2
Advances in Packaging, Characterization and Liquid Cooling

Lobby Level, Garden Room 1:00pm - 2:30pm

Session Organizer: Sreekant Narumanchi, National Renewable Energy Laboratory, Golden, CO, United States

Session Co-Organizer: Gilberto Moreno, National Renewable Energy Laboratory, Golden, CO, United States

Modular Flow Structure Design for a Single-Phase Manifold Microchannel Cold Plate

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48029

Feng Zhou, Toyota Research Institute of North America, Ann Arbor, MI, United States, Yan Liu, Toyota Technical Center, Ann Arbor, MI, United States, Shailesh Joshi, Toyota, Ann Arbor, MI, United States, Yanghe Liu, Ercan Dede, Toyota Research Institute of North America, Ann Arbor, MI, United States

Characterization of Contact and Bulk Thermal Resistance of Laminations for Electric Machines

InterPACK Technical Presentation: InterPACKICNMM2015-48462

J. Emily Cousineau, Kevin Bennion, Douglas DeVoto, Sreekant Narumanchi, National Renewable Energy Laboratory, Golden, CO, United States

Non-Intrusive Case Temperature Measurement Method of Direct-Water-Cooled Power Module

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48625

Keisuke Horiuchi, Hitachi Ltd, Ibaraki-ken, Japan, Yuichiro Konishi, Hitachi, Ltd., Hitachinaka, Ibaraki, Japan, Atsuo Nishihara, Hitachi. Ltd., Hitachinaka, Ibaraki, Japan

Thermal Characterization of GaN HEMTs via Thermal-Reflectance Imaging

InterPACK Technical Presentation: InterPACKICNMM2015-48551

Banafsheh Barabadi, Yuhao Zhang, Tomas Palacios, Evelyn N. Wang, MIT, Cambridge, MA, United States

MEMS AND NEMS

3-4
N/MEMS: Emerging Technology

3-4-1
Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems

Arcade Level, Diplomat Room 1:00pm - 2:30pm

Session Organizer: Jianhua Yang, University of Massachusetts, Amherst, Amherst, MA, United States

Session Co-Organizer: David Garmire, University of Hawaii, Honolulu, HI, United States

Graphene NEMS: from Quantum Hall Effect to Gangnam Style

InterPACK Invited Presentation: InterPACKICNMM2015-48729

Changyao Chen, Argonne National Laboratory, Argonne, IL, United States

Controlled Hierarchical Growth of Nanowires by Surface Modification using Atomic Layer Deposition

InterPACK Technical Presentation: InterPACKICNMM2015-48431

Neil Dasgupta, Ashley R. Bielinski, Eric Kazyak, University of Michigan, Ann Arbor, MI, United States, Christian M. Schlepütz, Argonne National Laboratory, Argonne, IL, United States

Molybdenum Disulfide (MoS2) Nanomechanical Resonators Integrated on Microchannels

InterPACK Technical Paper Publication: InterPACKICNMM2015-48590

Rui Yang, Case Western Reserve University, Cleveland, OH, United States, Zhenyu Li, George Washington University, Washington, DC, United States, Philip Feng, Case Western Reserve University, Cleveland, OH, United States

Two-dimensional Monolayer MX2 (M=Mo, W; X=S, Se) Synthesis, Characterization and Device Applications

InterPACK Technical Paper Publication: InterPACKICNMM2015-48286

Bin Xiang, Lei Yang, Jian Huang, Qi Fu, University of Science and Technology of China, Hefei, Anhui, China

Thermal Management Using Micro Channels, Jets, Sprays

Track Organizer: Thomas Brunschwiler, IBM Research - Zurich, Rueschlikon, Switzerland

Track Co-Organizer: Satish Kandlikar, RIT, Rochester, NY, United States, Mark Steinke, Lenovo, Morrisville, NC, United States, Michael Ohadi, University of Maryland, College Park, MD, United States

5-4
Liquid and Synthetic Jets

5-4-1
Liquid and Synthetic Jets

Mezzanine Level, California Room 1:00pm - 2:30pm

Session Organizer: Sidy Ndao, University of Nebraska-Lincoln, Lincoln, NE, United States

Session Co-Organizer: Damena D. Agonafer, Stanford University, Stanford, CA, United States

A Computational Study on the Momentum and Heat Transfer Distribution of a Low Frequency Round Impinging Synthetic Jet

InterPACK Technical Paper Publication: InterPACKICNMM2015-48094

Muhammad Ikhlaq, Ozyegin University, Istanbul, Istanbul, Turkey, Baris Dogruoz, Cisco, San Jose, CA, United States, Omidreza Ghaffari, Mehmet Arik, Ozyegin University, Istanbul, Istanbul, Turkey

Local Thermal Measurements of Impinging Liquid Jets with an Angled Confining Wall for Power Electronics Cooling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48393

John F. Maddox, Auburn University, Auburn, AL, United States, Roy W. Knight, Sushil H. Bhavnani, Auburn University, Auburn University, AL, United States

Impingement Cooling in a Simulated Data Center Servers with an Array of Elliptic Air Jets

ICNMM Technical Paper Publication: InterPACKICNMM2015-48588

Sheng Kai Chang, Lo Yuan Hsiang, National Chiao Tung University, HsinChu, Taiwan, Yao-Hsien Liu, National Chiao-Tung University, Hsinchu, Taiwan, Taiwan

Response Surface Optimization of Critical Structure Parameters of a Micropump Based on Synthetic Jet

ICNMM Technical Paper Publication: InterPACKICNMM2015-48823

Xiuhua He, Jiangsu University, Zhenjiang, China, Xitong Zhang, Feng Huang, Jiawei Zhu, Jiangsu University, School of Energy and Power Engineering, Zhenjiang, Jiangsu, China

Evaluation of Cooling Performance of Impinging Jet Array with Extraction Hole in a Novel Cooling Structure

InterPACK Technical Presentation: InterPACKICNMM2015-48161

Sun-Min Kim, Kwang-Yong Kim, Inha University, Incheon, Korea (Republic)

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-2
Two Phase Flows

6-2-3
Numerical Investigation of Two Phase Flows - I

Mezzanine Level, International Room 1:00pm - 2:30pm

Session Organizer: Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada

Session Co-Organizer: Rui Qiao, Virginia Tech, Blacksburg, VA, United States

Computational and Experimental Study of Gas Bubbles Removal in a Microfluidic System

ICNMM Technical Paper Publication: InterPACKICNMM2015-48561

Hamed Gholami Derami, Jeff Darabi, Southern Illinois University Edwardsville, Edwardsville, IL, United States

Simulation of Wave Propagations in the Two-phase Flow

ICNMM Technical Presentation: InterPACKICNMM2015-48806

Moon-sun Chung, Korea Institute of Energy Res, Daejeon, Korea (Republic)

Numerical Simulation of Taylor Flow in Micro Circular Tubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48194

Jingzhi Zhang, Zhejiang University, Hangzhou, Zhejiang, China, Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China

Numerical Modeling of Pore Fluid Flow in Reconstructed Porous Media

ICNMM Technical Paper Publication: InterPACKICNMM2015-48337

Zhenyu Liu, Huiying Wu, Shanghai Jiao Tong University, Shanghai, China

Electrostatic Preclusion of Droplet Adhesion in a Microchannel

ICNMM Technical Paper Publication: InterPACKICNMM2015-48451

Jonathan C. Hui, Binghamton University, State University of New York, Binghamton, NY, United States, Peter Huang, State University of New York at Binghamton, Binghamton, NY, United States

6-4
Pool Boiling and Condensation

6-4-3
Pool Boiling: Heat Transfer Enhancement

Mezzanine Level, Hunt Room 1:00pm - 2:30pm

Session Organizer: Jonathan Boreyko, Virginia Tech, Blacksburg, VA, United States

Session Co-Organizer: Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Heat Transfer Performance of Supercritical Carbon Dioxide in Microchannels

ICNMM Technical Paper Publication: InterPACKICNMM2015-48212

Chien-Yuh Yang, Kun-Chieh Liao, National Central University, Jhong-Li, Taiwan

Effect of Channel Width on Pool Boiling Enhancement of Open Microchannels with Selective Sintered Porous Coatings

ICNMM Technical Paper Publication: InterPACKICNMM2015-48477

Arvind Jaikumar, Satish Kandlikar, RIT, Rochester, NY, United States

Critical Heat Flux of Graphene Coated Copper Surface at High Pressures

ICNMM Technical Paper Publication: InterPACKICNMM2015-48509

Nanxi Li, Amy Betz, Kansas State University, Manhattan, KS, United States

Pool Boiling Heat Transfer Enhancement using Surfaces with Mixed Thermal Conductivity

ICNMM Technical Presentation. InterPACKICNMM2015-48548

MD Mahamudur Rahman, Matthew McCarthy, Drexel University, Philadelphia, PA, United States

Film Boiling Heat Transfer Enhancement via Electrostatic Leidenfrost State Suppression

InterPACK Technical Paper Publication: InterPACKICNMM2015-48667

Arjang Shahriari, Vaibhav Bahadur, University of Texas at Austin, Austin, TX, United States

6-7
Electrokinetic Flows

6-7-3
Electrokinetics and Electrohydrodynamics

Lobby Level, Empire Room 1:00pm - 2:30pm

Session Organizer: Chun Yang, Nanyang Technological University, Singapore, Singapore

Session Co-Organizer: Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

Continuum Simulations of Salt Solution Flow in TMV-based Biological Membrane for Water Desalination

ICNMM Technical Presentation: InterPACKICNMM2015-48220

Srikumar Krishnamoorthy, Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Electric Control of Liquid Metal Flow in Capillary

InterPACK Technical Presentation: InterPACKICNMM2015-48327

Zhizhu He, Technical Institute of Physics and Chemistry, Beijing, China, Lei Li, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China, Jing Liu, Chinese Academy of Sciences, Beijing, China

Electrothermally Driven Flow at High Conductivity Medium

ICNMM Technical Presentation: InterPACKICNMM2015-48446

Anil Koklu, Ahmet C. Sabuncu, Amin Mansoorifar, Southern Methodist University, Dallas, TX, United States

Validation of Fluid Transport within a Liquid Droplet Undergoing Electrowetting

ICNMM Technical Presentation: InterPACKICNMM2015-48492

Nicholas G. Garafolo, University of Akron, Akron, OH, United States, Andrew Killmeyer, The University of Akron, Akron, OH, United States

Nonlinear Electrokinetic Effects on Particle Motion Near a Microchannel Constriction

ICNMM Technical Presentation: InterPACKICNMM2015-48589

Naga Dingari, Qianru Wang, Cullen Buie, Massachusetts Institute of Technology, Cambridge, MA, United States

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-4
High Temperature & Harsh Environment Electronic Devices and Packaging

Lobby Level, French Room 1:00pm - 2:30pm

Session Organizer: Patrick McCluskey, University of Maryland, College Park, MD, United States

High Temperature (›200°C) Packaging for Downhole Applications

InterPACK Invited Presentation: InterPACKICNMM2015-48850

Kaustubh Nagarkar, GE Global Research Center, Niskayuna, NY, United States

GaN, SiC and AlN for Harsh-environment Sensors and Electronics

InterPACK Invited Presentation: InterPACKICNMM2015-48865

Debbie G. Senesky, Stanford University, Stanford, CA, United States

EMERGING TECHNOLOGY FRONTIERS

2-3
Near Junction Thermal Transport In Electronic Devices

2-3-1
Advanced Thermal Management and Metrology I

Lobby Level, Green Room 2:45pm - 4:15pm

Session Organizer: David Altman, Raytheon

Session Co-Organizer: Yogendra Joshi, Georgia Tech

Characterization of AlGaN/GaN HEMTs using Gate Resistance Thermometry

InterPACK Technical Presentation: InterPACKICNMM2015-48253

Georges Pavlidis, Georgia Institute of Technology, Atlanta, GA, United States, Eric Heller, Air Force Research Laboratories, Dayton, OH, United States, Donald Dorsey, Air Force Research Laboratory, Dayton, OH, United States, Michael D. Hodge, Rama Vetury, Qorvo, Greensboro, NC, United States, Samuel Graham, Georgia Tech, Atlanta, GA, United States

Thermal Characterization of Nanocrystalline Diamond Films On Silicon

InterPACK Technical Presentation: InterPACKICNMM2015-48691

Jungwan Cho, Aditya Sood, Fariah Hayee, Stanford University, Stanford, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

GaN-on-Diamond Thermal Management Technology

InterPACK Technical Presentation: InterPACKICNMM2015-48211

Felix Ejeckam, Daniel Francis, Daniel Twitchen, Bruce Bolliger, Firooz Faili, Element Six Technologies, Santa Clara, CA, United States

GaN on Diamond Technology: Challenges and Impact of Next Generation GaN

InterPACK Technical Presentation: InterPACKICNMM2015-48495

Matthew Tyhach, Raytheon, Tewksbury, MA, United States, David Altman, Raytheon Integrated Defense Systems, Framingham, MA, United States, Steven Bernstein, Raytheon, Tewksbury, MA, United States

Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules

InterPACK Technical Presentation: InterPACKICNMM2015-48713

Sukwon Choi, Gregory M. Peake, Gordon A. Keeler, Kent M. Geib, Ronald D. Briggs, Jascinda Clevenger, Gary A. Patrizi, John F. Klem, Christopher Nordquist, Sandia National Laboratories, Albuquerque, NM, United States

2-4
Power Electronics and Electric Machines

2-4-3
Advances in Liquid and Two-Phase Cooling Techniques and Characterization

Lobby Level, Garden Room 2:45pm - 4:15pm

Session Organizer: Kevin Bennion, National Renewable Energy Laboratory, Golden, CO, United States

Session Co-Organizer: Keisuke Horiuchi, Hitachi Ltd, Ibaraki-ken, Japan

Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams

ICNMM Technical Paper Publication: InterPACKICNMM2015-48020

Francesco Agostini, ABB Switzerland Ltd, Daettwil Baden, Switzerland, Waylon Puckett, Ryan Nelson, ABB Switzerland Ltd, Baden-Daettwil, Switzerland, Daniele Torresin, ABB Schweiz AG, Baden-Daettwil, Switzerland, Bruno Agostini, ABB Switzerland Ltd., Baden-Dättwil, Switzerland, Mathieu Habert, ABB Corporate Research, Baden-Daettwil, Switzerland

Characterisation of a Novel Pulsating Heat Pipe Cooler for Power Electronics at Extreme Ambient Temperatures

ICNMM Technical Paper Publication: InterPACKICNMM2015-48031

Daniele Torresin, ABB Schweiz AG, Baden-Daettwil, Switzerland, Mathieu Habert, ABB Corporate Research, Baden-Daettwil, Switzerland, Violette Mounier, Ecole Polytechnique de Lausanne (EPFL), Neuchâtel, Switzerland, Francesco Agostini, ABB Switzerland Ltd, Daettwil Baden, Switzerland, Bruno Agostini, ABB Switzerland Ltd., Baden-Dättwil, Switzerland

Convective Heat Transfer Coefficients of Automatic Transmission Fluid Jets with Implications for Electric Machine Thermal Management

InterPACK Technical Paper Publication: InterPACKICNMM2015-48382

Kevin Bennion, Gilberto Moreno, National Renewable Energy Laboratory, Golden, CO, United States

Centrifugally Pumped Thermosiphons for Motor Rotor Cooling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48516

Seth McElhinney, University of Wisconsin-Madison, Madison, WI, United States, Timothy Shedd, University of Wisconsin-Madison, Madison, WI, United States, Thomas M. Jahns, University of Wisconsin-Madison, Madison, WI, United States

MEMS AND NEMS

3-3
N/MEMS: Fabrication, Integration, Packaging, Test & Reliability

3-3-2
Failure Mechanisms, Reliability & Testing Methods

Mezzanine Level, Far East Room 2:45pm - 4:15pm

Session Organizer: Vikram Mukundan, FormFactor, Livermore, CA, United States

Session Co-Organizer: Wei-Cheng Lien, SanDisk Corporation, Milpitas, CA, United States

Mechanical Shock Reliability Analysis and Multiphysics Modeling of MEMS Accelerometers in Harsh Environments

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48457

Pradeep Lall, Nakul Kothari, Auburn University, Auburn, AL, United States, Jessica Glover, US Army AMRDEC, Auburn, AL, United States

Shrinkage of Post-Cure Die Attach Adhesives during Isothermal Storage

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48086

Ruiyang Liu, Hohyung Lee, Binghamton University, Binghamton, NY, United States, Seungbae Park, Binghamton University, Binghamton, NY, United States, Xiaojie Xue, Analog Devices Inc, Wilmington, MA, United States

Defect Density Distributions in Atomic Layer Deposited Films on Polymer Webs

InterPACK Technical Presentation: InterPACKICNMM2015-48229

Alexander Yersak, University of Colorado Boulder, Boulder, CO, United States, Yung Cheng Lee, University of Colorado, Boulder, CO, United States, Joe Spencer, Markus Groner, ALD NanoSolutions, Broomfield, CO, United States

MEMS Die Wapage during Curing of Die Attach Material

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48010

Hohyung Lee, Ruiyang Liu, Binghamton University, Binghamton, NY, United States, Seungbae Park, Binghamton University, Binghamton, NY, United States, Xiaojie Xue, Analog Devices Inc, Wilmington, MA, United States

3-4
N/MEMS: Emerging Technology

3-4-2
Biosensors & Systems, Biomedicine, & Microfluidics

Diplomat Room 2:45pm - 4:15pm

Session Organizer: E. Yegan Erdem, Bilkent University, Ankara, Turkey

Session Co-Organizer: Jim Cheng, Maxim Integrated, San Jose, CA, United States

Low-cost BioMEMS - Unconventional Methods and Materials

InterPACK Invited Presentation: InterPACKICNMM2015-48896

Karl F. Bohringer, University of Washington, Seattle, WA, United States

Polymer-based High Throughput Immunoassay Chip Using Porous Monoliths and Gold Nanoparticles

ICNMM Technical Presentation: InterPACKICNMM2015-48021

Jun-You Chen, National Chung Hsing University, Taichung, Taiwan, Cheng-Po Wang, National Chung Hsing University, Taichung City, Taiwan, Vuduy Tung, National Chung Hsing University, Taichung, Taiwan, Chien-Fu Chen, National Chung Hsing University, Taichung City, Taiwan

Silica Synthesis and Coating of Quantum Dots in Droplet Based Microreactors

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48765

Alican Ozkan, Bilkent University, Ankara, Cankaya, Turkey, Yusuf Kelestemur, Bilkent University - UNAM, Ankara, Turkey, Hilmi Volkan Demir, E. Yegan Erdem, Bilkent University, Ankara, Cankaya, Turkey

Microfluidic Calorimeter for Absolute Dosimetry

InterPACK Technical Presentation: InterPACKICNMM2015-48320

Jonghyun Kim, Korea Advanced Institute of Science and Technology, Daejeon, Korea (Republic), Wonhee Lee, Korea Advanced Institute of Science and Technology, Daejeon, Korea (Republic)

THERMAL MANAGEMENT

4-1
Data Centers and Energy Efficient Electronic Systems

4-1-1
Data Center Control and Optimization

Lobby Level, French Room 2:45pm - 4:15pm

Session Organizer: Mark Steinke, Lenovo, Morrisville, NC, United States

Session Co-Organizer: Nishi Ahuja, Intel Corporation, Seattle, WA, United States

Key Technologies to Implement High Thermal Ambient Data Center

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48015

Shu Zhang, Yu Han, Alibaba Group, Hangzhou,China, Nishi Ahuja, Intel Corporation, Seattle, WA, United States, Xiaohong Liu, Huahua Ren, Guangliang Guo, Alibaba Group, Hangzhou, China

Data Center Cooling Efficiency with Simulation-Based Optimization

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48425

Laurent Billet, Christopher Healey, Jim VanGilder, Zachary Pardey, Schneider Electric, Andover, MA, United States

Discrete Control of Air Conditioning Units in Mission Critical Facilities

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48593

Sergio Bermudez, Hendrik Hamann, Levente Klein, Fernando Marianno, IBM TJ Watson Center, Yorktown Heights, NY, United States, Alan Claassen, IBM, Fremont, CA, United States

Neural Network Modelling in Model-Based Control of a Data Center

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48684

Nachiket Kansara, Rohit Katti, University of Texas at Arlington, Arlington, TX, United States, Kourosh Nemati, Binghamton University SUNY, Binghamton, NY, United States, Alan Bowling, University of Texas at Arlington, Arlington, TX, United States, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States

4-9
Thermal Modeling Methodologies and Simulations

4-9-1
Multiphysics and Multiscale Modeling for Thermal Management of Electronics

Lobby Level, Empire Room 2:45pm - 4:15pm

Session Organizer: Emil Rahim, Qualcomm, San Diego, CA, United States

Session Co-Organizer: Mehmet Arik, Ozyegin University, Istanbul, Turkey

Experimental Validation of a Detailed Phase Change Model on a Hardware Testbed

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48568

Charlie De Vivero, Fulya Kaplan, Ayse Coskun, Boston University, Boston, MA, United States

Thermal Conductivity Prediction in Bulk Nanostructured Materials from Single Interface Molecular Dynamics Simulations

InterPACK Technical Presentation: InterPACKICNMM2015-48599

ChangJin Choi, Nick Roberts, Utah State University, Logan, UT, United States

A Numerical Study on the Thermal Conductivity of Hybrid-Filler-Nanoparticle Composite Materials

InterPACK Technical Paper Publication: InterPACKICNMM2015-48740

Ich-Long Ngo, Yeungnam University, Gyeongsan, Korea (Republic), Chan Byon, Yeungnam University, Gyengson, Korea (Republic)

Reduced Order Modeling for Chip-Embedded Micro-Channel Flow Boiling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48370

Pritish Parida, IBM, Yorktown Heights, NY, United States

Optimal Design of High-Heat-Flux Capillary Evaporator

ICNMM Technical Paper Publication: InterPACKICNMM2015-48586

Kapot Tarafder, Gisuk Hwang, Wichita State University, Wichita, KS, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-5
Vapor chambers & condensation

5-5-1
Vapor chambers & condensation

Mezzanine Level, California Room 2:45pm - 4:15pm

Session Organizer: Yasuyuki Takata, Kyushu Univ, Fukuoka 819-0395, Japan

Session Co-Organizer: Justin A. Weibel, Purdue University, West Lafayette, IN, United States

Condensation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48196

Xiao-peng Zhou, Zhejiang University, Hangzhou, Zhejiang, China, David Kukulka, State University of New York, Buffalo, Buffalo, NY, United States, Jing Li, Hangzhou Yuhu Technology Co. Ltd, Hangzhou, Zhejiang, China, Jian-jun Sun, Zhejiang University, Hangzhou, Zhejiang, China, Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China

A General Correlation for Condensation Heat Transfer in Micro-Fin for Herringbone and Dimple-Texture Tubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48198

Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China, Si-pu Guo, Xiao-peng Zhou, Zhejiang University, Hangzhou, Zhejiang, China, David Kukulka, State University of New York, Buffalo, Buffalo, NY, United States, Jin-liang Xu, North China Electric Power University, Beijing, China

A Capillary-Wick Heat Pipe Fabricated on a Plastic Board - Fundamental Experiments on Heat Transport Characteristics

InterPACK Technical Paper Publication: InterPACKICNMM2015-48308

Yasushi Koito, Hiroyuki Maehara, Daisuke Shimada, Toshio Tomimura, Kumamoto University, Kumamoto, Japan

Fabrication of a Vapor Chamber on a Plastic Board

InterPACK Technical Paper Publication: InterPACKICNMM2015-48554

Fumihiko Hideyama, Shuto Nonoshita, Yasushi Koito, Toshio Tomimura, Kumamoto University, Kumamoto, Japan

Design,Fabrication and Characterizations for Ultra-Thin Thermal Ground Planes

InterPACK Technical Presentation: InterPACKICNMM2015-48363

Shanshan Xu, Ryan J., Lewis, Li-Anne Liew, University of Colorado Boulder, Boulder, CO, United States, Yung Cheng Lee, Ronggui Yang, University Of Colorado, Boulder, CO, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-1
Single Phase Flows

6-1-4
Heat Transfer in Single Phase Flows

Mezzanine Level, Hunt Room 2:45pm - 4:15pm

Session Organizer: Masahiro Motosuke, Tokyo University of Science, Tokyo, Japan

Session Co-Organizer: Heinz Herwig, Technical University Hamburg-Harburg (M-21), Hamburg, Germany

Heat Transfer Enhancement of Microchannel Heat Sink with Rib Shaped Vortex Generators

ICNMM Technical Presentation: InterPACKICNMM2015-48077

Yeong-Ley Tsay, Jen-Chieh Cheng, National Formosa University, Yunlin, Taiwan

Flow and Heat Transfer Characteristics in High Porosity Metal Foams

ICNMM Technical Presentation: InterPACKICNMM2015-48240

Dae Yeon Kim, Daeyeon Kim, Sang Youl Yoon, Pusan National University, Busan, Korea (Republic), Kyung Chun Kim, Pusan National University, Busan, Korea (Republic)

Mixed Convection Heat Transfer of Supercritical CO2 in Miniature Tube

ICNMM Technical Presentation: InterPACKICNMM2015-48673

Wei-Mon Yan, Yen-Joe Ye, National Taipei University of Technology, Taipei, Taiwan

Numerical Modeling of Forced Convective Transport in a Channel with Conducting-Lubricating (CO-LUB) Surfaces

ICNMM Technical Paper Publication: InterPACKICNMM2015-48799

Jessica Reyes, Krishna Kota, New Mexico State University, Las Cruces, NM, United States

Hybrid Mini/Micro-Channel Heat Sink Using Liquid Metal and Water as Coolants

InterPACK Technical Paper Publication: InterPACKICNMM2015-48318

Sheng-Fu MEI, Zhong-Shan Deng, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China, Jing Liu, Chinese Academy of Sciences, Beijing, China

6-2
Two Phase Flows

6-2-4
Numerical Investigation of Two Phase Flows - II

Mezzanine Level, International Room 2:45pm - 4:15pm

Session Organizer: Zhenyu Liu, Shanghai Jiao Tong University, Shanghai, China

Session Co-Organizer: Rui Qiao, Virginia Tech, Blacksburg, VA, United States

Comprehensive Two Fluid Model Simulation of Critical Two-Phase Flow through Short Tube Orifices

ICNMM Technical Paper Publication: InterPACKICNMM2015-48047

Puya Javidmand, Wichita State University, Wichita, KS, United States, Klaus Hoffmann, Wichita State University, Wichita, KS, United States

Numerical-Based Comparison among Critical Flow Properties of HFC-134a and its New Alternatives HFO-1234yf and HFO-1234ze through Short-Tube Orifices

ICNMM Technical Paper Publication: InterPACKICNMM2015-48048

Puya Javidmand, Wichita State University, Wichita, KS, United States, Klaus Hoffmann, Wichita State University, Wichita, KS, United States

Exploration of Phase Change within a Capillary Flow Driven Square Micro-Channel Using Lattice Boltzmann Method and Experimental Boundary Conditions

ICNMM Technical Paper Publication: InterPACKICNMM2015-48482

Eric Borquist, Leland Weiss, Louisiana Tech University, Ruston, LA, United States, Greg Smith, Radiance Technologies, Ruston, LA, United States

Computational Modeling of Extreme Heat Flux Microcooler for GaN-based HEMT

InterPACK Technical Paper Publication: InterPACKICNMM2015-48670

Hyoungsoon Lee, Stanford University, Stanford, CA, United States, Yoonjin Won, Stanford University, Palo Alto, CA, United States, Farzad Houshmand, Stanford University, Stanford, CA, United States, Catherine Gorle, Columbia University, New York, NY, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

Multiphase Approach on Heat Transfer Performance of Microchannel using Hybrid Carbon Nanofluid

ICNMM Technical Paper Publication: InterPACKICNMM2015-48117

Rajesh Nimmagadda, K Venkatasubbaiah, Indian Institute of Technology Hyderabad, Hyderabad, Telangana, India

PANELS

9-1
Panel Topics

9-1-4
Impact of Microfluidics and Lab-on-a-Chip on Bio: Challenges and Opportunities

Lobby Level, Pavilion Room 2:45pm - 4:15pm

Session Organizer: Carolyn Ren, University of Waterloo, Waterloo, ON, Canada

Panelists:

Paul Chiarot, State University of New York at Binghamton, Mechanical Engineering

Michael Schertzer, Assistant Professor, Rochester Institute of Technology, Mechanical Engineering

Josh Molho, CTO and Co-founder at Zephyrus Biosciences, Inc.

Scott Tsai, Assistant Professor, Ryerson University, Mechanical and Industrial Engineering

EMERGING TECHNOLOGY FRONTIERS

2-2
Thermal Management: LED

2-2-1
Thermal Management of LEDs

Lobby Level, Garden Room 4:45pm - 6:15pm

Session Organizer: James Petroski, Mentor Hraphics, Parma, OH, United States

Session Co-Organizer: Karl Geisler, 3M, St Paul, MN, United States

Design of Practical Liquid Metal Cooling System for High Power LED Lamp in Outdoor Use

InterPACK Technical Presentation: InterPACKICNMM2015-48319

Sheng-Fu Mel, Zhong-Shan Deng, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China, Jing Liu, Chinese Academy of Sciences, Beijing, China

Robust Data Acquisition for Building Lighting Systems

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48445

Zachary Pearson, Tanya Crenshaw, Heather Dillon, Erik Paulson, Nick Warlen, University of Portland, Portland, OR, United States

Analyzing Temperature Changes in Powered LEDs by Combining Thermal and Radiometric Characterization with Computational Fluid Dynamics

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48635

Boris Marovic, Mathew Clark, Mentor Graphics, Frankfurt, Germany, James Petroski, Mentor Hraphics, Parma, OH, United States

Thermal Management in Quantum Cascade Lasers and Frequency Combs

InterPACK Technical Presentation: InterPACKICNMM2015-48747

Jerome Faist, ETH, Zurich, Switzerland

Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation over LED Systems

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48326

Sevket Yuruker, Enes Tamdogan, Mehmet Arik, Ozyegin University, Istanbul, Turkey, Rustamjon Melikov, Koc University, Istanbul, Turkey, Ilkem Durak, Ozyegin University, Istanbul, Turkey, Daniel Press, Sedat Nizamoglu, Koc University, Istanbul, Turkey

2-3
Near Junction Thermal Transport In Electronic Devices

2-3-2
Advanced Thermal Management and Metrology II

Lobby Level, Green Room 4:45pm - 6:15pm

Session Organizer: David Altman, Raytheon

Session Co-Organizer: Yogendra Joshi, Georgia Tech

Development of a Diamond Microfluidics-Based Intra-Chip Cooling Technology for GaN

InterPACK Technical Paper Publication: InterPACKICNMM2015-48179

David Altman, Raytheon Integrated Defense Systems, Framingham, MA, United States, Anurag Gupta, Raytheon, Sudbury, MA, United States, Matthew Tyhach, Raytheon, Tewksbury, MA, United States

Advanced Cooling Designs for GaN-on-Diamond MMICs

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48429

Geoffrey Campbell, Henry Eppich, Keith Lang, Science Research Laboratory, Inc., Somerville, MA, United States, Carlton Creamer, BAE Systems, Technology Solutions, Nashua, NH, United States, Thomas Yurovchak, BAE Systems - Electronic Systems, Nashua, NH, United States, Kanin Chu, BAE Systems, Technology Solutions, Nashua, NH, United States, Adonis Kassinos, BAE Systems, San Jose, CA, United States, Michael Ohadi, Amir Shooshtari, University of Maryland, College Park, MD, United States, Serguei Dessiatoun, University of Maryland, Colmar Manor, MD, United States

Electrical, Photonic, and Thermal Integration Technologies for Heterogeneous Electronics

InterPACK Technical Presentation: InterPACKICNMM2015-48674

Muhannad Bakir, Georgia Institute of Technology, Atlanta, GA, United States

Impingement Cooled Embedded Diamond GaN HEMTs

InterPACK Technical Presentation: InterPACKICNMM2015-48739

Vincent Gambin, Benjamin Poust, Monte Watanabe, Dino Ferizovic, Aaron Oki, Mike Wojtowicz, Northrop Grumman, Redondo Beach, CA, United States

The Temperature and Deformation Response of AlGaN/GaN HEMTs under RF Operating Conditions

InterPACK Technical Presentation: InterPACKICNMM2015-48256

Jason Jones, Georgia Institute of Technology, Atlanta, GA, United States, Matthew Rosenberger, William King, University of Illinois, Urbana, IL, United States, Samuel Graham, Georgia Tech, Atlanta, GA, United States

MEMS AND NEMS

Track Organizer: Debbie G. Senesky, Stanford University, Stanford, CA, United States

3-4
N/MEMS: Emerging Technology

3-4-3
Wearables, Flexible Systems, & Microrobotics

Diplomat 4:45pm - 6:15pm

Session Organizer: Igor Paprotny, University of Illinois, Chicago, IL, United States

Session Co-Organizer: Inkyu Park, KAIST, Yuseong-gu, Daejeon, Korea (Republic)

Flexible 2D Nanoelectronics

InterPACK Invited Presentation: InterPACKICNMM2015-48717

Weinan Zhu, Sherry Chang, University of Texas, Austin, TX, United States, Deji Akinwande, The University of Texas, Austin, TX, United States

Design Rules and Prototype Examples for Additive Printing of Flexible Electronics

InterPACK Invited Presentation: InterPACKICNMM2015-48789

Tse Nga Ng, Ping Mei, Steve Ready, Gregory Whiting, David Schwartz, Janos Veres, Palo Alto Research Center, Palo Alto, CA, United States

Hierarchical Three-dimensional Carbon Nanostructures for Flexible High-energy Supercapacitors

ICNMM Technical Presentation: InterPACKICNMM2015-48265

Yuegang Zhang, Chinese Academy of Sciences, Suzhou, China

Molding and Bonding of Thin Film Parylene for Flexible Microfluidics

InterPACK Technical Presentation: InterPACKICNMM2015-48322

Jihye Kim, Korea Advanced Institute of Science and Technology, Daejeon, Korea (Republic), Wonhee Lee, Korea Advanced Institute of Science and Technology, Daejeon, Korea (Republic)

RFIC Transformer with 12x Size Reduction and 15x Performance Enhancement by Self-Rolled-Up Membrane Nanotechnology

InterPACK Technical Paper Publication: InterPACKICNMM2015-48585

Wen Huang, Moyang Li, University of Illinois at Urbana-Champaign, Urbana, IL, United States, Songbin Gong, University of Illinois at Urbana Champaign, Urbana, IL, United States, Xiuling Li, University of Illinois at Urbana-Champaign, Urbana, IL, United States

THERMAL MANAGEMENT

4-1
Data Centers and Energy Efficient Electronic Systems

4-1-2
Data Center Transient Modeling and Measurements

Lobby Level, French Room 4:45pm - 6:15pm

Session Organizer: Aaron Wemhoff, Villanova University, Villanova, PA, United States

Session Co-Organizer: Dustin Demetriou, IBM, Poughkeepsie, NY, United States

Comparative Analysis of Different In Row Cooler Management Configurations in a Hybrid Cooling Data Center

InterPACK Technical Paper Publication: InterPACKICNMM2015-48069

Tianyi Gao, SUNY Binghamton University, Binghamton, NY, United States, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States, James Geer, SUNY Binghamton University, Binghamton, NY, United States, Bruce Murray, Suny At Binghamton, Binghamton, NY, United States, Russell Tipton, Emerson Network Power, Columbus, OH, United States, Roger Schmidt, IBM Corp, Poughkeepsie, NY, United States

Steady State and Transient Comparison of Perimeter and Row-based Cooling Employing Controlled Cooling Curves

InterPACK Technical Paper Publication: InterPACKICNMM2015-48237

Husam Alissa, Kourosh Nemati, Binghamton University SUNY, Binghamton, NY, United States, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States, Alfonso Ortega, Villanova University, Villanova, PA, United States, Dave King, Future Facilities Ltd, London, United Kingdom, Mark Seymour, Future Facilities, London, London, United Kingdom, Russell Tipton, Emerson Network Power, Columbus, OH, United States

Experimental Characterization of the Transient Response of Air/Water Crossflow Heat Exchangers for Data Center Cooling Systems

InterPACK Technical Paper Publication: InterPACKICNMM2015-48375

Marcelo Del Valle, Alfonso Ortega, Villanova University, Villanova, PA, United States

The Effectiveness of Data Center Overhead Cooling in Steady and Transient Scenarios: Comparison of Downward Flow to a Cold Aisle versus Upward Flow from a Hot Aisle

InterPACK Technical Paper Publication: InterPACKICNMM2015-48423

Luis Silva-Llanca, Universidad de La Serena, La Serena, Chile, Marcelo del Valle, Alfonso Ortega, Villanova University, Villanova, PA, United States

Parameter Estimation for Lumped Capacitance Modeling of CRAH Units during Chilled Water Interruption

InterPACK Technical Paper Publication: InterPACKICNMM2015-48430

Hamza Salih Erden, Syracuse University, Syracuse, NY, United States, H. Ezzat Khalifa, Syracuse University, Manlius, NY, United States

4-9
Thermal Modeling Methodologies and Simulations

4-9-2
Thermal Modeling and Optimization Techniques

Lobby Level, Empire Room 4:45pm - 6:15pm

Session Organizer: Reza Khiabani, Google, Mountain View, CA, United States

Session Co-Organizer: Baris Dogruoz, Cisco, San Jose, CA, United States

Microprocessor Silicon Die Temperature Prediction by Simplified Boundary Conditions

InterPACK Technical Paper Publication: InterPACKICNMM2015-48205

Koji Nishi, AMD Japan, Tokyo, Japan, Tomoyuki Hatakeyama, Toyama Prefectural University, Imizu, Toyama, Japan, Shinji Nakagawa, Toyama Prefectural University, Toyama, Japan, Masaru Ishizuka, Toyama Prefectural University, Toyama, Japan

CFD Analysis of an Air Cooled Planar Heat Sink with Cross-Connected Alternating Converging-Diverging Channels

InterPACK Technical Paper Publication: InterPACKICNMM2015-48277

Omer Bugra Kanargi, National University of Singapore, Singapore, Poh-seng Lee, National University of Singapore, Singapore, Christopher YAP, National University of Singapore, Singapore,

Thermal Modeling of Remote Radio Head Units

InterPACK Technical Paper Publication: InterPACKICNMM2015-48606

Manasa Sahini, Betsegaw Gebrehiwot, Dereje Agonafer, University of Texas at Arlington, Arlington, TX, United States, Rocky Colapietro, Commscope, Richardson, TX, United States

A Composite Cu/HOPG Heat Spreader for Immersion Cooling of High Power Chips

InterPACK Technical Paper Publication: InterPACKICNMM2015-48678

Arthur Suszko, University of New Mexico, Albuquerque, NM, United States, Mohamed El-Genk, University of New Mexico, Albuquerque, NM, United States

Challenges and Opportunities in Thermal Management of Multi-Chip Packages

InterPACK Technical Paper Publication: InterPACKICNMM2015-48362

Hemanth Dhavaleswarapu, Intel Corporation, Chandler, AZ, United States, Chandra Mohan (CM) Jha, Intel, Chandler, AZ, United States, Susan Smith, Intel Corporation, DuPont, WA, United States, Sanjoy Saha, Ashish Gupta, Shrenik Kothari, Intel Corporation, Chandler, AZ, United States, Baris Bicen, Intel Corporation, Chandler, AZ, United States

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

5-2
Flow-boiling experimental investigations

5-2-2
Pool and flow-boiling

Mezzanine Level, California Room 4:45pm - 6:15pm

Session Organizer: Thomas Brunschwiler, IBM Research - Zurich, Rueschlikon, Switzerland

Session Co-Organizer: Mark Steinke, Lenovo, Morrisville, NC, United States

Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling

ICNMM Technical Presentation: InterPACKICNMM2015-48828

Masamichi Kohno, Masayuki Yamada, Biao Shen, Sumitomo Hidaka, Koji Takahashi, Kyushu University, Fukuoka, Japan, Yasuyuki Takata, Kyushu University, Fukuoka, Japan

Convective Flow Boiling of PF-5060 a Dielectric Fluid in Micro Pin Fin Heat Sinks

ICNMM Technical Presentation: InterPACKICNMM2015-48235

Erfan Rasouli, Oregon State University, Corvallis, OR, United States, Vinod Narayanan, Oregon State University, Corvallis, OR, United States

High Heat Flux Flow Boiling using Liquid-Artery Capillary Wick

ICNMM Technical Presentation: InterPACKICNMM2015-48170

Brandon Shannon, Gisuk Hwang, Wichita State University, Wichita, KS, United States

Evaporation Device with Nanoporous Membrane for High Heat Flux

InterPACK Technical Presentation: InterPACKICNMM2015-48559

Daniel Hanks, Jay Sircar, Zhengmao Lu, Dion Antao, Shankar Narayanan, Banafsheh Barabadi, MIT, Cambridge, MA, United States, Todd Salamon, Bell Labs - Alcatel Lucent, Providence, NJ, United States, Evelyn N. Wang, MIT, Cambridge, MA, United States

Single Phase and Two Phase Flow Characteristics and Heat Transfer in Micro-fin Tubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48263

Junye Li, Si-pu Guo, Jing Zhang, Zhejiang University, Hangzhou, Zhejiang, China, Wei Li, Zhejiang University, Hang-Zhou City,

Zhejiang, China, Jin-jia Wei, Xi'an Jiaotong University, Xi'an, Shanxi, China, Terrence Simon, University of Minnesota, Minneapolis, MN, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-2
Two Phase Flows

6-2-5
Experimental Investigation of Two Phase Flows

Mezzanine Level, International Room 4:45pm - 6:15pm

Session Organizer: Yuri Muzychka, Memorial University of Newfoundland, St John's, NL, Canada

Session Co-Organizer: Rishi Raj, IIT Patna, Patna, India, Masahiro Kawaji, City College of New York, New York, NY, United States

Physics of Interfacial Heat Transfer Events in Flow Boiling of FC-72 Liquid in Microchannels

InterPACK Technical Paper Publication: InterPACKICNMM2015-48581

Sajjad Bigham, Saeed Moghaddam, University of Florida, Gainesville, FL, United States

Measurement of Liquid Film Thickness in Slug Flow of Air and Viscous Liquid in a Microchannel

ICNMM Technical Paper Publication: InterPACKICNMM2015-48663

Lok Fung, Masahiro Kawaji, City College of New York, New York, NY, United States

Subcooled Flow Boiling Over Microstructured Al-Alloy Plates in Rectangular Channel

ICNMM Technical Presentation: InterPACKICNMM2015-48091

Yagmur Sisman, Ali Kosar, Sabanci University, Istanbul, Turkey, Khedir R. Khedir, Tansel Karabacak, University of Arkansas at Little Rock, Little Rock, AR, United States

Flow Boiling Heat Transfer Characteristics of Gamma-Al2O3/water Nanofluid in Horizontal Microtubes

ICNMM Technical Presentation: InterPACKICNMM2015-48090

Mehrdad Karimzadehkhouei, Sinan Eren Yalcin, Kursat Sendur, Sabanci University, Istanbul, Turkey, M. Pinar Menguc, Ozyegin University, Istanbul, Turkey, Ali Kosar, Sabanci University, Istanbul, Turkey

Evaporation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48199

Jian-jun Sun, Jing-xiang Chen, Zhejiang University, Hangzhou, Zhejiang, China, David Kukulka, State University of New York, Buffalo, Buffalo, NY, United States, Kan Zhou, Zhejiang University, Hangzhou, Zhejiang, China, Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China, Yanping Shi, Shanxi Fenxi Heavy Industry Co.,ltd., Taiyuan, Shanxi, China

6-5
Micro/Nano Structures in Phase Change Heat Transfer

6-5-4
Two-Phase Flows

Mezzanine Level, Hunt Room 4:45pm - 6:15pm

Experimental Investigation of Evaporation and Condensation in Herringbone: Smooth and EHT Tubes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48202

Xiao-peng Zhou, Jian-jun Sun, Si-pu Guo, Zhejiang University, Hangzhou, Zhejiang, China, Sun Zhichuan, Huazhong University of science and Technology, Wuhan, Hubei, China, Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China

Flow Boiling Heat Transfer Coefficient of DI-Water/SiO2 Nanofluid Inside a 1.1 mm Round Microchannel

ICNMM Technical Paper Publication: InterPACKICNMM2015-48317

Tiago A. Moreira, Francisco J. do Nascimento, Gherhardt Ribatski, University of Sao Paulo, Sao Carlos, Sao Paulo, Brazil

Boiling Heat Transfer Performance in a Spiraling Radial Inflow Microchannel Cold Plate

ICNMM Technical Paper Publication: InterPACKICNMM2015-48406

Maritza Ruiz, Claire M Kunkle, Jorge Padilla Jr, UC Berkeley, Berkeley, CA, United States, Van P. Carey, University of California, Berkeley, Berkeley, CA, United States

Integrate Monolithic Nanostructures in Microchannels to Enhance Flow Boiling Heat Transfer of HFE-7000

InterPACK Technical Paper Publication: InterPACKICNMM2015-48737

Fanghao Yang, IBM, Yorktown Heights,, NY, United States, Xiaochuan Li, Yangzhou University, Yangzhou, Jiangsu, China, Wenming Li, Chen Li, University of South Carolina, Columbia, SC, United States

Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels

ICNMM Technical Presentation: InterPACKICNMM2015-48314

Li Zhang, Hong Xu, Yan Sun, Jiayin Xu, Jin Xuan, Qing Luo, East China University of Science and Technology, Shanghai, China

PANELS

9-1
Panel Topics

9-1-6
Embedded Cooling - IceCool APPs

Lobby Level, Pavilion Room 4:45pm - 6:15pm

Session Organizer: Avram Bar-Cohen, University of Maryland at College Park, College Park, MD, United States

Panelists:

Benjamin Poust, Northrup Grumman Aerospace Systems

Dave Altman, Senior Principal Mechanical Engineer, Raytheon

Carl Cramer, Technology Development Manager, BAE

Ken Vanhille, Nuvotronics

John Ditry, Lockheed Martin

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

14-5
Novel Modeling, Test and Characterization Methods

14-5-1
Novel Modeling, Test and Characterization Methods

Mezzanine Level, Far East Room 4:45pm - 6:15pm

Session Organizer: Gerd Schlottig, IBM Zurich Research Laboratory, Zurich, Switzerland

Session Co-Organizer: Virendra Jadhav, Microsoft, Seattle, WA, United States

Characterization of the Effects of Silver Content on the Aging Resistance of SAC Solder Joints

InterPACK Technical Paper Publication: InterPACKICNMM2015-48623

Md Hasnine, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Barton Prorok, Michael Bozack, Pradeep Lall, Auburn University, Auburn, AL, United States

An Inverse Procedure for Estimating the Anand Viscoplastic Constitutive Model Parameters for Copper Free-Air Ball

InterPACK Technical Paper Publication: InterPACKICNMM2015-48653

Sai Sudharsanan Paranjothy, Ganesh Subbarayan, Purdue University, West Lafayette, IN, United States, Dae Young Jung, Bahgat Sammakia, Binghamton University, Binghamton, NY, United States

DIC Based Investigation into the Effect of Mean Temperature of the Thermal Cycle on the Strain State in SnAgCu Solder Joint

InterPACK Technical Paper Publication: InterPACKICNMM2015-48727

Pradeep Lall, Kazi Mirza, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States

LED Chip Deformation Measurement during the Operation Using the X-Ray CT Digital Volume Correlation

InterPACK Technical Paper Publication: InterPACKICNMM2015-48785

Pradeep Lall, Junchao Wei, Auburn University, Auburn, AL, United States

Design of Next Generation Antenna Mounts

InterPACK Technical Paper Publication: InterPACKICNMM2015-48594

Rubengregory Puthotadominicsavio, Betsegaw Gebrehiwot, Dereje Agonafer, University of Texas at Arlington, Arlington, TX, United States, Al Skrepcinski, Tom Palmer, CommScope Inc, Euless, TX, United States

Thursday, July, 09

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-1
Advances in Packaging

1-1-1
Packaging Interconnects

Mezzanine Level, International Room 7:45am - 9:15am

Session Organizer: Kaustubh Nagarkar, GE Global Research Center, Niskayuna, NY, United States

Session Co-Organizer: Arun Gowda, GE Global Research, Niskayuna, NY, United States

Aluminum-Copper Ribbon Interconnects for Power Devices

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48156

Christoph Luechinger, Raymond Chen, Jason Fu, Bernard Poncelet, Kulicke & Soffa, Santa Ana, CA, United States, Orlando Valentin, Klucke & Soffa, Santa Ana, CA, United States, Todd Walker, Tao Xu, Kulicke & Soffa, Santa Ana, CA, United States

Mechanism and Model of Bond Formation in Ultrasonic Wire Bonding

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48613

T. Calvin Tszeng, Santa Clara University, Santa Clara, CA, United States

Analysis of Intermetallic Formation during Ultrasonic Ball Bonding

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48812

Panthea Sepehrband, Maryam Gholamirad, Santa Clara University, Santa Clara, CA, United States

An Efficient Bump Pad Design to Mitigate the Flip Chip Package Induced Stress

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48111

Mario Gonzalez, Joeri De Vos, Geert Van der Plas, Eric Beyne, Imec, Leuven, Belgium

Thermal Stress Simulation for 3D SiP with TSV Structure under Unsteady Thermal Loads

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48142

Takahiro Kinoshita, Toyama Prefectural University, Toyama, Japan, Japan, Takashi Kawakami, Tomoya Sugiura, Toyama Prefectural University, Imizu, Japan, Keiji Matsumoto, IBM Research-Tokyo, Tokyo, Japan, Sayuri Kohara, IBM Japan, Ltd., Kawasaki, Kanagawa, Japan, Yasumitsu Orii, IBM Japan, Kanagawa, Japan

1-1-2
Material Characterization

Mezzanine Level, Hunt Room 7:45am - 9:15am

Session Organizer: Upendra Sheth, Intel Corporation, Chandler, AZ, United States

Session Co-Organizer: Ashish Gupta, Intel Corporation, Chandler, AZ, United States

A Basic Study on Creep-Fatigue Damages Interaction for Sn-3.0Ag-0.5Cu as Lead Free Solder Material

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48138

Hirokazu Oriyama, Takashi Kawakami, Toyama Prefectural University, Imizu, Japan, Takahiro Kinoshita, Toyama Prefectural University, Toyama, Japan, Japan

Evaluation of Fatigue Crack Initiation and Propagation in Thin Solder Joints Using a Lap-Joint Shear Specimen with High Stiffness Fixtures

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48605

Masayoshi Kinoshita, Toyama Prefectural University, Imizu, Japan, Toshihiko Sayama, Toyama Industrial Technology Center, Toyama, Japan, Hiroyuki Tsuritani, Toyama Prefectural Office, Toyama, Japan, Yoshiyuki Okamoto, Cosel Co., Ltd., Toyama, Japan, Takao Mori, Toyama Prefectural University, Toyama, Japan

Nondestructive Observation of Thermal Fatigue Crack Propagation in FBGA and Die Attached Solder Joints by Synchrotron Radiation X-Ray Laminography

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48553

Takuya Hanamura, Toyama Prefectual University, Imizu-si, Japan, Hiroyuki Tsuritani, Toyama Prefectural Office, Toyama, Japan, Toshihiko Sayama, Toyama Industrial Technology Center, Toyama, Japan, Yoshiyuki Okamoto, Cosel Co., Ltd., Toyama, Japan, Takeshi Takayanagi, Cosel Co.,Ltd, Toyama, Japan, Kentaro Uesugi, Masato Hoshino, Spring-8, Japan Synchrotron Radiation Research Institute, Hyogo, Japan, Takao Mori, Toyama Prefectural University, Toyama, Japan

Evaluation of Intensity of Singularity at 3D Piezoelectric Bonded Joints Using a Conservative Integral

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48275

Chonlada Luangarpa, Nagaoka University of Technology, Niigata, Niigata, Japan, Hideo Koguchi, Nagaoka University of Technology, Nagaoka, Niigata Prefecture, Japan

Evaluation of the Strength of Interface for Multi-Layered Materials in Photonic Devices

InterPACK Technical Paper Publicatio: InterPACKICN-MM2015-48105

Hideo Koguchi, Nagaoka University of Technology, Nagaoka, Niigata Prefecture, Japan, Naoki Kimura, Graduate school, Nagaoka University of Technology, Nagaoka, Niigata, Japan

1-6
Harsh Environments and High Temperature Electronics

1-6-3
Shock, Vibration and Other Harsh Environments

Lobby Level, Empire Room 7:45am - 9:15am

Session Organizer: Milena Vujosevic, Intel Corporation, Folsom, CA, United States

Session Co-Organizer: Patrick McCluskey, University of Maryland, College Park, MD, United States

Photonic Sensors for Harsh Environment Monitoring

InterPACK Technical Presentation: InterPACKICNMM2015-48688

Miao Yu, University of Maryland, College Park, MD, United States

Shock Risk Assessment of BGA Components - Importance of Physics Based Metrics

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48576

Helia Rahmani, Intel, Chandler, AZ, United States, Milena Vujosevic, Intel Corporation, Folsom, CA, United States, Min Pei, Intel, Hillborough, OR, United States

Influence of Secondary Impact on Failure Modes in PWAs with High Resonant Frequency

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48669

Jingshi Meng, University of Maryland, College Park, MD, United States, Abhijit Dasgupta, CALCE/University of Maryland, College Park, MD, MD, United States

Durability of Large Electronic Components Undergoing Multi-Axial Vibratory Excitation

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48709

Raman Sridharan, Ed. Habtour, University of Maryland, College Park, MD, United States, Abhijit Dasgupta, CALCE/University of Maryland, College Park, Maryland, MD, United States, Elaine Lin, University of Maryland, College Park, MD, United States

EMERGING TECHNOLOGY FRONTIERS

2-7
2D Materials, Graphene & CNT Thermal Characterization & Applications

2-7-2
Graphene Characterization & Applications

7:45am - 9:15am

Session Organizer: Amy Marconnet, Purdue University, West Lafayette, Indiana, United States

Session Co-Organizer: Yongjie Hu, University of California, Los Angeles, Los Angeles, CA, United States

Effect of Three Dimensional Strain on the Electronic Properties of Graphene Nanoribbons

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48239

Meng Yang, Masato Ohnishi, Ken Suzuki, Tohoku University, Sendai, OO, Japan, Hideo Miura, Tohoku University, Sendai, Japan

Thermal Conductivity of Phonon Modes in Graphene Nanoribbon at Localized High Heating

InterPACK Technical Paper Publication: InterPACKICNMM2015-48297

Tatiana Zolotoukhina, Toyama University, Toyama, Toyama-Ken, Japan

Parameter Estimation from Thermoreflectance Measurements

InterPACK Technical Presentation: InterPACKICNMM2015-48340

Jia Yang, Boston University, Boston, MA, United States, Aaron Schmidt, Boston University, Boston, MA, United States

Modeling of Thermal Transport in Flexible Electronics

InterPACK Technical Presentation: InterPACKICNMM2015-48372

Prabhakar Marepalli, University of Texas, Austin, Austin, TX, United States, Yu Huang, The University of Texas, Austin, TX, United States, Mir Mohammad Sadeghi, University of Texas at Austin, Austin, TX, United States, Saungeun Park, Deji Akinwande, The University of Texas, Austin, TX, United States, Li Shi, University of Texas, Austin, TX, United States, Jayathi Murthy, The University of Texas, Austin, TX, United States

Thermal Boundary Conductance at Metal-Graphene-Metal Interfaces using Time-domain Thermoreflectance Method

InterPACK Technical Paper Publication: InterPACKICNMM2015-48444

David B. Brown, Thomas Bougher, Georgia Institute of Technology, Atlanta, GA, United States, Baratunde Cola, Georgia Institute of Technology, Atlanta, GA, United States, Satish Kumar, Georgia Institute of Technology, Atlanta, GA, United States

THERMAL MANAGEMENT

4-1
Data Centers and Energy Efficient Electronic Systems

4-1-3
Data Center Liquid Cooling Implementation and Performance

Mezzanine Level, California Room 7:45am - 9:15am

Session Organizer: Saurabh Shrivastava, Panduit, Chicago, IL, United States

Session Co-Organizer: Sandeep Ahuja, Intel Corporation, DuPont, WA, United States

Understanding the True Total Cost of Ownership of Water Cooling for Data Centers

InterPACK Technical Paper Publication: InterPACKICNMM2015-48152

Dustin Demetriou, IBM, Poughkeepsie, NY, United States, Howard Mahaney, IBM, Cedar Park, TX, United States, Vinod Kamath, Lenovo, Morrisville, NC, United States

Thermodynamic Analysis of Full Liquid-Cooled Data Centers

InterPACK Technical Paper Publication: InterPACKICNMM2015-48439

Anish Bhalerao, Aaron Wemhoff, Villanova University, Villanova, PA, United States

Thermodynamic Characterization of a Server Optimized for High Performance Computing Using Water Cooling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48466

Mark Steinke, Vinod Kamath, Lenovo, Morrisville, NC, United States, Lynn Parnell, Consulting Engineer, Charlottesville, VA, United States

Thermodynamic Characterization of a Direct Water Cooled Server Rack Running Synthetic and Real High Performance Computing Work Loads

InterPACK Technical Paper Publication: InterPACKICNMM2015-48470

Lynn Parnell, Consulting Engineer, Charlottesville, VA, United States, Garrison Vaughan, Information Technology Coalition, Inc. (ITC), Alexandria, VA, United States, John Thompson, PTP, LLC, Clarksville, MD, United States, Daniel Duffy, NASA, Greenbelt, MD, United States, Louis Capps, NVIDIA Corporation, Santa Clara, CA, United States, Mark Steinke, Vinod Kamath, Lenovo, Morrisville, NC, United States

A Computational Study to Compare the Data Center Cooling Energy Spent Using Traditional Air Cooled and Hybrid Water Cooled Servers

InterPACK Technical Paper Publication: InterPACKICNMM2015-48476

Aparna Vallury, Mark Steinke, Vinod Kamath, Lenovo, Morrisville, NC, United States, Lynn Parnell, Consulting Engineer, Charlottesville, VA, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-1
Single Phase Flows

6-1-1
Numerical Modeling of Single Phase Flows

Lobby Level, Garden Room 7:45am - 9:15am

Session Organizer: Giulio Croce, University Di Udine, Udine, Italy

Session Co-Organizer: Heinz Herwig, Technical University Hamburg-Harburg Hamburg, Germany

Turbulent Flow in the Micro Structures of Porous Media

ICNMM Technical Paper Publication: InterPACKICNMM2015-48074

Heinz Herwig, Technical University Hamburg-Harburg, Hamburg, Germany, Yan Jin, Tu Hamburg-Harburg, Hamburg, Germany, Marc-Florian Uth, Hamburg University of Technology, Hamburg, Germany, Andrey Kuznetsov, North Carolina State University, Raleigh, NC, United States

2D Lattice Boltzmann Simulation of Droplet Jumping in a Viscous Fluid

ICNMM Technical Paper Publication: InterPACKICNMM2015-48107

Shenghui Lei, Bell Labs Ireland, Alcatel-Lucent, Dublin, Ireland, Ningning Wang, Haihu Liu, Xi'an Jiaotong University, Xi'an, China, Ryan Enright, Kevin Nolan, Bell Labs Ireland, Alcatel-Lucent, Dublin, Ireland

Breakdown of Continuum Hypothesis in Nano-Scale Confined Liquid Flows

ICNMM Technical Presentation: InterPACKICNMM2015-48273

Jafar Ghorbanian, Southern Methodist University, Dallas, TX, United States, Ali Beskok, Southern Methodist University, Chesapeake, VA, United States

Effects of Fabrication Imperfections on Fully Developed Flow in Rectangular Micro-Channels

ICNMM Technical Paper Publication: InterPACKICNMM2015-48461

Isabela Florindo, Universidade Federal Fluminense, Niteroi, RJ, Brazil, Giacomo Puccetti, Università di Bologna, Bologna, Italy, Leandro Sphaier, Universidade Federal Fluminense, Niteroi, RJ, RJ, Brazil, Gian Luca Morini, Università di Bologna, Bologna, Italy

Modeling Low Reynolds Number Flows Driven by Forward-Propagating and Reflected Boundary Waves in Concentric Micro-Cylinders

ICNMM Technical Paper Publication: InterPACKICNMM2015-48463

Mikhail Coloma, William M. Buehler, Binghamton University, State University of New York, Binghamton, NY, United States, J. David Schaffer, Binghamton University, State University of New York, NY, United States, Paul R. Chiarot, Peter Huang, State University of New York at Binghamton, Binghamton, NY, United States

6-5
Micro/Nano Structures in Phase Change Heat Transfer

6-5-1
Evaporation

Diplomat 7:45am - 9:15am

Homogeneous Vapor Nucleation of Electrolyte Solution within a Nanopore

ICNMM Technical Paper Publication: InterPACKICNMM2015-48026

Ho-young Kwak, Chung-Ang University, Seoul, Korea (Republic), Jaekyoon Oh, Yungpil Yoo, Chung-Ang University, Seoul, Korea (Republic)

Heat and Mass Transfer Performance of Nanostructured Evaporator Wicks Combined with Porous Metal Liquid Supply Structures

ICNMM Technical Presentation: InterPACKICNMM2015-48207

Seunggeol Ryu, Youngsuk Nam, Kyung Hee University, Yongin, Korea (Republic)

Localized, High Heat Flux, Two Phase Cooling Using Capillary Fed Porous Structures

InterPACK Technical Presentation: InterPACKICNMM2015-48260

James Palko, Stanford University, Stanford, CA, United States, Thomas J Dusseault, GE Global Research, Niskayuna, NY, United States, Chi Zhang, Joshua Wilbur, Stanford University, Stanford, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States, Juan Santiago, Stanford University, Stanford, CA, United States

Tailoring of Permeability in Copper Inverse Opal for Electronic Cooling Applications

InterPACK Technical Paper Publication: InterPACKICNMM2015-48262

Chi Zhang, Stanford University, Stanford, CA, United States, Guoguang Rong, Shanghai Jiaotong University, Shanghai, China, James Palko, Stanford University, Stanford, CA, United States, Thomas J Dusseault, GE Global Research, Niskayuna, NY, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Juan Santiago, Stanford University, Stanford, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

Localized Heat for Efficient Evaporation

InterPACK Technical Presentation: InterPACKICNMM2015-48358

Nazanin Farokhnia, Hadi Ghasemi, University of Houston, Houston, TX, United States

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

8-1
Fuel Cells & Other Energy Devices

8-1-1
Applications in Fuel Cells, Battery and Water Systems

Lobby Level, Green Room 7:45am - 9:15am

Session Organizer: Brian M. Fronk, Oregon State University, Corvallis, OR, United States

Session Co-Organizer: Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

Removal of Shape Deformation in the Free Energy Based LBM for Large Density Ratio Adopted in the PEFC Simulation

ICNMM Technical Paper Publication: InterPACKICNMM2015-48296

Jiaming Gong, Hokkaido University, Sapporo Hokkaido, Japan, Nobuyuki Oshima, Hokkaido University, Sapporo, Japan, Yutaka Tabe, Hokkaido University, Sapporo, Japan

The Development and Characterization of a Microfluidic Battery

ICNMM Technical Presentation: InterPACKICNMM2015-48345

Hamid Falahati, Edward Kim, Alisha Giglio, Queen's University Fuel Cell Research Centre, Kingston, ON, Canada, Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

An Updated Two-Phase Flow Regime Map in Active PEM Fuel Cells Based on a Force Balance Approach

ICNMM Technical Paper Publication: InterPACKICNMM2015-48527

Lifeng Zhang, University of Saskatchewan, Saskatoon, SK, Canada, Ryan Anderson, Montana State University, Bozeman, MT, United States

Microscale Physics of Fabric Dewatering Subjected to High Frequency Ultrasonic Waves

ICNMM Technical Presentation: InterPACKICNMM2015-48545

Deepu Prabhakaran, Saitej Ravi, University of Florida, Gainesville, FL, United States, Ayyoub Momen, Oak Ridge National Laboratory, Oak Ridge, TN, United States, Saeed Moghaddam, University of Florida, Gainesville, FL, United States

Performance Characterization of a Capacitive Deionization Water Desalination System With an Intermediate Solution and Low Salinity Water

ICNMM Technical Paper Publication: InterPACKICNMM2015-48833

Seyedehyasamin Salamat, Carlos Rios Perez, Carlos Hidrovo, Northeastern University, Boston, MA, United States

8-4
Mixing, Mass Transfer, and Chemical Reactions

8-4-1
Mixing, MT + CR I

Mezzanine Level, Far East Room 7:45am - 9:15am

Session Organizer: Norbert Kockmann, TU Dortmund University, Dortmund, Germany

Session Co-Organizer: Brian M. Fronk, Oregon State University, Corvallis, OR, United States

Experimental Investigation of Fischer-Tropsch Synthesis in a Microchannel Reactor

ICNMM Technical Presentation: InterPACKICNMM2015-48035

Li Zhang, Xiang Ying, Hong Xu, Qing Luo, Hongwei Zhu, Jun Cao, Jin Xuan, East China University of Science and Technology, Shanghai, China

Effect of Microchannel Geometric Structure on Hydrogen Production Performance in Methanol Steam Reformer

ICNMM Technical Presentation: InterPACKICNMM2015-48631

Feng Yao, Southeast University, Nanjing, China, Xiangyong Huang, Yongping Chen, Yangzhou University, Yangzhou, China

Hydrogel Micro-system with Multiple Bacteria to Enhance Ammonia Removal Process

ICNMM Technical Presentation: InterPACKICNMM2015-48730

Jun Kameoka, Kung-Hui Chu, S A P L Samarasinghe, Texas A&M University, College Station, TX, United States

Formation Characteristics of Bio-Coke Produced From Waste Agricultural Biomass

InterPACK Technical Paper Publication: InterPACKICNMM2015-48767

Satoru Mizuno, Tamio Ida, Manabu Fuchihata, Kinki University, Osaka, Japan, Edmundo Sanchez, Kinki University, Hokkaido, Japan, Koji Yoshikuni, Kinki University, Osaka, Japan

Two-Phase Flow and Mass Transfer in Helical Capillary Flow Reactors with Alternating Bends

ICNMM Technical Paper Publication: InterPACKICNMM2015-48416

Norbert Kockmann, Tu Dortmund University, Dortmund, Germany, Safa Kutup Kurt, Tu Dortmund, Dortmund, Germany, KDP Nigam, IIT Delhi, Delhi, India

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-7
Mechanistic considerations and Enhancement Techniques for Flow Boiling Heat Transfer in the Microscale

Lobby Level, French Room 7:45am - 9:15am

Session Co-Organizer: Vinod Narayanan, Oregon State University, Corvallis, OR, United States

Flow Boiling in Advanced Microchannel Configurations - Opening Diverse Pathways to Meet the High Heat flux Removal Challenge

ICNMM Invited Presentation: InterPACKICNMM2015-48863

Satish Kandlikar, RIT, Rochester, NY, United States

Micro scale Piranha Pin-Fins (PPF) Heat Exchanger

ICNMM Invited Presentation: InterPACKICNMM2015-48864

Yoav Peles, University of Central Florida, Orlando, FL, United States

EMERGING TECHNOLOGY FRONTIERS

2-7
2D Materials, Graphene & CNT Thermal Characterization & Applications

2-7-1
CNT Characterization & Applications

Mezzanine Level, International Room 9:30am - 11:00am

Session Organizer: Satish Kumar, Georgia Institute of Technology, Atlanta, GA, United States

Session Co-Organizer: Yaguo Wang, University of Texas at Austin, Austin, TX, United States

Numerical Investigation of Electrical and Thermal Transport in Carbon Nanotube Array Transistors

InterPACK Technical Presentation: InterPACKICNMM2015-48185

Man Prakash Gupta, Georgia Institute of Technology, Atlanta, GA, United States, Satish Kumar, Georgia Institute of Technology, Atlanta, GA, United States

Role of Molecule Desorption in the Thermal and Electrical Properties of Carbon Nanotube Networks

InterPACK Technical Presentation: InterPACKICNMM2015-48519

Milad Yarali, University of Houston, Houston, TX, United States, Ji Hao, Northeastern University, Boston, MA, United States, Mohammad Khodadadi, University of Houston, Houston, TX, United States, Yung Joon Jung, Northeastern University, Boston, MA, United States, Anastassios Mavrokefalos, University Of Houston, Houston, TX, United States

Thermal Manipulation of Carbon Nanotube Fiber by Mechanical Stretching

InterPACK Technical Presentation: InterPACKICNMM2015-48650

Yanan Yue, Wuhan Univ., Wuhan, MI, United States

THERMAL MANAGEMENT

4-3
Thermal Management: Thermal Interface Materials & Heat Spreading

4-3-1
Thermal Interface Materials - I

Mezzanine Level, California Room 9:30am - 11:00am

Session Organizer: Mehdi Saeidi, Qualcomm, San Diego, CA, United States

Session Co-Organizer: Emil Rahim, Qualcomm, San Diego, CA, United States

Effective Thermal Management with Different Thermal Interface Materials for Different Applications

InterPACK Technical Presentation: InterPACKICNMM2015-48543

Fred Lo, Kevin Chung, Ai Technology, Princeton Jucntion, NJ, United States

On Simple Prediction Method for Thermal Contact Resistance between Wavy Surfaces with Thermal Interface Material under Low Mean Nominal Contact Pressure (Fundamental Study Based on 1-D Model)

InterPACK Technical Paper Publication: InterPACKICNMM2015-48302

Toshio Tomimura, Yasushi Koito, Taewan Do, Kumamoto University, Kumamoto, Kumamoto, Japan, Masaru Ishizuka, Toyama Prefectural University, Toyama, Japan, Tomoyuki Hatakeyama, Toyama Prefectural University, Imizu, Toyama, Japan

Mechanical Solution for Dealing with Phase Change Material Flow When Mounting Electrical Components

InterPACK Technical Paper Publication: InterPACKICNMM2015-48634

Paul J. Grosskreuz, P.E., Rui Zhou, Kelly J. Bronk, Rockwell Automation, Mequon, WI, United States

The Detection of Minimum BLT Condition with Electrical Capacitance Measurement

InterPACK Technical Paper Publication: InterPACKICNMM2015-48303

Yasuhiro Saito, Satoru Suzuki, Takanori Komuro, Kanagawa Institute of Technology, Atsugi, Japan

Measuring and Optimizing Thermal Interface Material Performance for VR Heatsink Designs

InterPACK Technical Paper Publication: InterPACKICNMM2015-48146

Jun Lu, Intel China Ltd., Minhang, China, Michelle C. Lin, Intel Corporation, Taipei, Taiwan, Bernie Short, Intel Corporation, DuPont, WA, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-1
Single Phase Flows

6-1-2
Experiments in Single Phase Flows

Lobby Level, Garden Room 9:30am - 11:00am

Session Organizer: Cesar J. Deschamps, Federal University of Santa Catarina, Florianopolis, SC, Brazil

Session Co-Organizer: Heinz Herwig, Technical University Hamburg-Harburg, Hamburg, Germany

On the 3D Structure of Elasticity-Induced Unstable Flow in the Curved Microchannel by Using Confocal Micro-PIV and Polarized Camera

ICNMM Technical Paper Publication: InterPACKICNMM2015-48190

Xiao-Bin Li, Harbin Institute of Technology, Harbin, Heilongjiang, China, Masamichi Oishi, Marie Oshima, The University of Tokyo, Tokyo, Japan, Fengchen Li, Harbin Institute of Tech, Harbin, China, Songjing Li, Harbin Institute of Technology, Harbin, China

Effect of Mechanical Vibration on Heat Transfer Characteristics of Liquid Film in Rectangular Microgrooves

ICNMM Technical Paper Publication: InterPACKICNMM2015-48294

Chaohong Guo, Dong Yu, Xuegong Hu, Institute of Engineering Thermophysics, CAS, Beijing, China, Yu Yan Jiang, Tao Wang, Institute of Engineering Thermophysics, Chinese Academy of Sciences, Beijing, China, Dawei Tang, Institute of Engineering Thermophysics, CAS, Beijing, China

Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging

ICNMM Technical Presentation: InterPACKICNMM2015-48540

Naoto Kakuta, Daisuke Kawashima, Hiroki Yamashita, Tokyo Metropolitan University, Hachioji, Tokyo, Japan, Katsuya Kondo, Tottori University, Tottori, Japan, Hidenobu Arimoto, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan, Yukio Yamada, The University of Electro-Communications, Chofu, Tokyo, Japan

Experimental Determination of Entropy Generation Rate Using Particle Image Velocimetry

ICNMM Technical Paper Publication: InterPACKICNMM2015-48595

James Stewart, Brock Ring, Brody Tucker, Rodney Worthen III, University of Central Oklahoma, Edmond, OK, United States, Evan Lemley, University of Central Oklahoma, Edmond, OK, United States

Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging

ICNMM Technical Paper Publication: InterPACKICNMM2015-48657

Yoshiyasu Ichikawa, Kojiro Nishiwake, Hiromu Wakayama, Yuki Kameya, Makoto Yamamoto, Masahiro Motosuke, Tokyo University of Science, Tokyo, Japan

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

8-1
Fuel Cells & Other Energy Devices

8-1-2
Applications in Other Energy Systems

Lobby Level, Green Room 9:30am - 11:00am

Session Organizer: Dominik P.J. Barz, Queen's University, Kingston, ON, Canada

Session Co-Organizer: Brian M. Fronk, Oregon State University, Corvallis, OR, United States

Application of Microchannel Condensers for Small Scale Kalina Waste Heat Recovery Systems

ICNMM Technical Paper Publication: InterPACKICNMM2015-48095

Brian M. Fronk, Kyle R. Zada, Oregon State University, Corvallis, OR, United States

Absorption Characteristics of Multilayered Thin Lithium Bromide (LiBr) Solution Film

ICNMM Technical Paper Publication: InterPACKICNMM2015-48225

Mehdi Mortazavi, Rasool Nasr Isfahani, Sajjad Bigham, Saeed Moghaddam, University of Florida, Gainesville, FL, United States

High Flux Microscale Solar Thermal Receiver for Supercritical Carbon Dioxide Cycles

ICNMM Technical Paper Publication: InterPACKICNMM2015-48233

Thomas L'Estrange, Oregon State University, Corvallis, OR, United States, Eric Truong, OSU, Corvallis, OR, United States, Erfan Rasouli, Oregon State University, Corvallis, OR, United States, Vinod Narayanan, Oregon State University, Corvallis, OR, United States, Charles Rymal, OSU, Corvallis, OR, United States, Sourabh Apte, Kevin Drost, Oregon State University, Corvallis, OR, United States

A Hybrid Absorption Cycle for Water Heating, Dehumidification, and Evaporative Cooling

InterPACK Technical Paper Publication: InterPACKICNMM2015-48816

Saeed Moghaddam, Devesh Chugh, Rasool Nasr Isfahani, University of Florida, Gainesville, FL, United States, Kyle Gluesenkamp, Omar Abdelaziz, Oak Ridge National Laboratory, Oak Ridge, TN, United States

A Computational and Experimental Study of Metal and Covalent Organic Frameworks Used in Adsorption Cooling

ICNMM Technical Paper Publication: InterPACKICN-MM2015-48822

Jeromy Jenks, Ward Tegrotenhuis, Radha Motkuri, PNNL, Richland, WA, United States, Brian Paul, Oregon State University, Corvallis, OR, United States, Pete McGrail, PNNL, Richland, WA, United States

PANELS

9-1
Panel Topics

9-1-7
Is Die-package Co-design the Key for Cost-effective Multi-die ICs?

Lobby Level, Pavilion Room 9:30am - 11:00am

Session Organizer: Herb Reiter, Eda 2 Asic Consulting, Inc, Los Altos, CA, United States

Panelists:

John Ferguson, Director, Mentor Graphics

Tom Gregorich, Vice President of Package Technologies, Micron

Bob Patti, CTO and VP of Design Engineering, Tezzaron Semiconductor

Rice Rice, Senior Vice President of Business Development, ASE Group

Jan Vardaman, President and Founder of TechSearch International, Inc.

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-6
Tuning Transport Phenomena Through Nanoscale Interfacial Engineering

Lobby Level, French Room 9:30am - 11:00am

Session Organizer: Ali Beskok, Southern Methodist University, Chesapeake, VA, United States

Manufacturing of Carbon Nanotube Microstructures for Interfacial Engineering

ICNMM Invited Presentation: InterPACKICNMM2015-48861

A John Hart, Massachusetts Institute of Technology, Somerville, MA, United States

Nanoengineered Surfaces for Enhanced Condensation Heat Transfer

ICNMM Invited Presentation: InterPACKICNMM2015-48862

Evelyn N. Wang, MIT, Cambridge, MA, United States

ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY

1-1
Advances in Packaging

1-1-3
Packaging Reliability

Lobby Level, Green Room 1:00pm - 2:30pm

Session Organizer: Takahiro Kinoshita, Toyama Prefectural University, Toyama, Japan,

Session Co-Organizer: Abhijit Dasgupta, CALCE/University of Maryland, College Park, Maryland, MD, United States

Design Optimization in the Integrity of Hermetically Sealed Package

InterPACK Technical Presentation: InterPACKICNMM2015-48013

Tse Wong, Raytheon Company, Los Alamitos, CA, United States

Mitigation of Tin Whisker Growth by Dopant Addition

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48155

Soumik Banerjee, Lutz Meinshausen, Washington State University, Pullman, WA, United States, Bhaskar Majumdar, New Mexico Tech, Socorro, NM, United States, Indranath Dutta, Washington State University, Pullman, WA, United States

Effects of Thermal Cycle Conditions on Thermal Fatigue Life of Substrate with Cu Through-hole

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48247

Yu Yamayose, Tetsuya Kugimiya, Kenji Hirohata, Akihiko Happoya, Toshiba Corp., Kawasaki, Japan, Nobutada Ohno, Nagoya University, Nagoya, Japan, Masao Sakane, Ritsumeikan University, Kusatsu, Japan

Improved Meshing Strategy for Finite Element Modeling of PBGA Thermal Cycling

InterPACK Technical Presentation: InterPACKICNMM2015-48788

Chienchih Chen, Auburn University, Auburn, AL, United States, Jeffrey C. Suhling, Auburn University, Auburn University, AL, United States, Pradeep Lall, Auburn University, Auburn, AL, United States

Mechanical Characterization of Assemblies Bonded With Pressure-Sensitive Adhesives (PSAs)

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48707

Hao Huang, University of Maryland, College Park, MD, United States, Abhijit Dasgupta, CALCE/University of Maryland, College Park, Maryland, MD, United States, Ehsan Mirbagheri, Srini Boddapati, Microsoft, Redmond, WA, United States

1-4
Flexible and Wearable Electronics

1-4-1
Flexible and Wearable Electronics

Mezzanine Level, Far East Room 1:00pm - 2:30pm

Session Organizer: Bradley Urban, Amazon Lab 126, Sunnyvale, CA, United States

Session Co-Organizer: Angel Qian Han, Huawei USA, San Diego, CA, United States

Highly Stretchable Interconnects for Flexible Electronics Applications

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48130

Yeasir Arafat, Rahul Panat, Indranath Dutta, Washington State University, Pullman, WA, United States

Improved Flexibility of Alumina Ultrathin Barrier Films by Nano-Lamination

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48503

Ryan Lewis, University of Colorado, Boulder, CO, United States, Julie Slaughter, University of Colorado at Boulder, Boulder, CO, United States, Yung Cheng Lee, University Of Colorado, Boulder, CO, United States

Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48704

Kaustubh Nagarkar, GE Global Research Center, Niskayuna, NY, United States, Craig Galligan, GE Global Research, Niskayuna, NY, United States, Michael Klitzke, Amphenol Advanced Sensors, Fremont, NY, United States, James Rose, GE Global Research, Niskayuna, NY, United States, Binoy Shah, GE, Niskayuna, NY, United States, Donna Sherman, GE Global Research, Niskayuna, NY, United States

Thermal Evaluation Process on Smart Watches

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48711

Angel Qian Han, Huawei USA, San Diego, CA, United States, Nanbo Kang, Huawei Consumer, San Diego, CA, United States

Die-package CO-design challenges and solutions

InterPACK Technical Presentation: InterPACKICNMM2015-48793

Herb Reiter, Eda 2 Asic Consulting, Inc, Los Altos, CA, United States

1-5
Silicon Photonics and LED

1-5-1
Silicon Photonics and LED

Lobby Level, Empire Room 1:00pm - 2:30pm

Session Organizer: Zhihua Li, Amazon, Sunnyvale, CA, United States

Session Co-Organizer: Shi-Wei Ricky Lee, Hong Kong University of Science and Technology, Hong Kong, Hong Kong

A Method to Eliminate the Effect of Phosphor Sedimentation on LEDs Angular Color Uniformity

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48023

Qi Chen, Run Hu, Yiman Wang, Huai Zheng, Huazhong University of Science and Technology, Wuhan, China, Xiaobing Luo, Huazhong University of Science & Technology, Wuhan, China

An Investigation of Catastrophic Failure in Solid-State Lamps Exposed to Harsh Environment Operational Conditions

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48257

Pradeep Lall, Peter Sakalaukus, Auburn University, Auburn, AL, United States, Lynn Davis, RTI International, Research Triangle Park, NC, United States

Modeling and Parametric Study of Light Scattering, Absorption and Emission of Phosphor in a White Light-Emitting Diode

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48664

Jiaqi Wang, Hong Kong University of Science and Technology, Hong Kong, Hong Kong, Jeffery C. C. LO, Center for Advanced Microsystems Packaging, Hong Kong University of Science and Technology, Hong Kong, Hong Kong, Mian Tao, Shi-Wei Ricky Lee, Hong Kong University of Science and Technology, Hong Kong, Hong Kong, Feng Yun, Xi'an Jiaotung University, Xi'an, China

Prognostics Health Management Model for LED Package Failure under Contaminated Environment

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48724

Pradeep Lall, Hao Zhang, Auburn University, Auburn, AL, United States, Lynn Davis, RTI International, Research Triangle Park, NC, United States

THERMAL MANAGEMENT

4-1
Data Centers and Energy Efficient Electronic Systems

4-1-4
Data Center Economizers and Waste Heat Recovery

Mezzanine Level, International Room 1:00pm - 2:30pm

Session Organizer: Dustin Demetriou, IBM, Poughkeepsie, NY, United States

Session Co-Organizer: Zachary Pardey, Schneider Electric, Andover, MA, United States

Consideration for Running Data Center at High Temperatures and Using Free Air Cooling

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48169

Yongzhan He, Guofeng Chen, Baidu, Beijing, China, Jiajun Zhang, Baidu, Beijing, China, Tianyu Zhou, Tao Liu, Baidu Corporation, Beijing, China, Pinyan Zhu, Chao Liu, Baidu, Beijing, China, Nishi Ahuja, Intel Corporation, Seattle, WA, United States

Effect of Relative Humidity, Temperature and Gaseous and Particulate

Contaminations on Information Technology Equipment Reliability

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48176

Prabjit Singh, IBM Corp, Poughkeepsie, NY, United States, Levente Klein, IBM TJ Watson Center, Yorktown Heights, NY, United States, Dereje Agonafer, Jimil M. Shah, Kanan Pujara, University of Texas at Arlington, Arlington, TX, United States

Theoretical and Empirical Energy Impacts of Economization in Data Centers

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48274

Dan Comperchio, Willdan Energy Solutions, Chicago, IL, United States, Sameer Behere, Syserco, Inc., Fremont, CA, United States

Energy Efficiency and Air Quality Considerations in Airside Economized Data Centers

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48349

Levente Klein, Sergio Bermudez, Hendrik Hamann, Fernando Marianno, IBM TJ Watson Center, Yorktown Heights, NY, United States, Prabjit Singh, IBM Corp, Poughkeepsie, NY, United States

Integration of Waste Heat Recovery Modules to the Chip to Cooling Tower Thermodynamic System Simulator VTAS

InterPACK Technical Presentation: InterPACKICNMM2015-48395

Aaron Wemhoff, Khosrow Ebrahimi, Gerard Jones, Amy Fleischer, Alfonso Ortega, Villanova University, Villanova, PA, United States

4-3
Thermal Management: Thermal Interface Materials & Heat Spreading

4-3-2
Thermal Interface Materials - II

Mezzanine Level, California Room 1:00pm - 2:30pm

Session Organizer: Sruti Chigullapalli, Intel Corporation, Chandler, AZ, United States

Session Co-Organizer: Gopi Krishnan, Intel Corporation, Chandler, AZ, United States

Mechanical Characterization of Metal Foams for Contact Resistance in Thermal Interface Applications

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48535

Ninad Trifale, Eric Nauman, Kazuaki Yazawa, Purdue University, West Lafayette, IN, United States

Onsite Synthesis of Thermally Percolated Nanocomposite for Thermal Interface Material

InterPACK Technical Presentation: InterPACKICNMM2015-48758

Masanao Oobori, The University of Tokyo, Tokyo, Japan, Satoshi Nita, The University of Tokyo, Bunkyo-ku, Tokyo, Japan, Asuka Miura, The University of Tokyo, Tokyo, Japan, Junichiro Shiomi, University of Tokyo, Tokyo, Japan

Durability of Low Melt Alloys as Thermal Interface Materials

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48083

Chandan Roy, Sushil Bhavnani, Michael Hamilton, Auburn University, Auburn, AL, United States, Wayne Johnson, Tennessee Technological University, Cookeville, TN, United States, Roy Knight, Daniel Harris, Auburn university, Auburn, AL, United States

The Efficiency of Heat Transfer through the Interface of Sintered Silver Nanoparticles

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48732

Tomasz Falat, Przemyslaw K. Matkowski, Krzysztof Stojek, Jan Felba, Bartosz Platek, Wroclaw University of Technology, Wroclaw, Poland, Andrzej Moscicki, Amepox Microelectronics Ltd., Lodz, Poland

Morphological Impact on Thermal Interface Resistance of Self Catalyzing Fecralloy MWNT TIMs

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48735

Timothy Longson, Compology, San Francisco, CA, United States, James Maddocks, Ali Kashani, Atlas Scientific, San Jose, CA, United States

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

6-1
Single Phase Flows

6-1-3
Single Phase Flows and System Design

Lobby Level, Garden Room 1:00pm - 2:30pm

Session Organizer: Giulio Croce, University Di Udine, Udine, Italy

Session Co-Organizer: Heinz Herwig, Technical University Hamburg-Harburg, Hamburg, Germany

Thermal Solution of High Flux Phased Radar Antenna for Military Application

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48055

Murat Parlak, Murat Yaban, Aselsan Inc .- REHIS Division, Ankara, Turkey

Numerical Simulation of Advanced Monolithic Microcooler Designs for High Heat Flux Microelectronics

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48122

Sebastian Scholl, Stanford University, Stanford, CA, United States, Catherine Gorle, Columbia University, New York, NY, United States, Farzad Houshmand, Tanya Liu, Hyoungsoon Lee, Yoonjin Won, Stanford University, Stanford, CA, United States, Hooman Kazemi, Nuvotronics LLC, Camarillo, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Kenneth Goodson, Stanford University, Stanford, CA, United States

Micro-Feature Heat Exchanger Using Variable-Density Arrays for Near-Isothermal Cold Plate Operation

InterPACK Technical Paper Publication: InterPACKICN-MM2015-48417

Noris Gallandat, Georgia Institute of Technology, Atlanta, GA, United States, Danielle Hesse, Georgia Tech, Atlanta, GA, United States, J. Mayor, Georgia Institute of Technology, Atlanta, GA, United States

Numerical Analysis of Fluid Flow through a Flexible Microstructure Induced by Acoustic Streaming

ICNMM Technical Paper Publication: InterPACKICNMM2015-48500

Bryan C. Rich, The University of Akron, Akron, OH, United States, Nicholas G. Garafolo, University of Akron, Akron, OH, United States

The Influence of Confinement on the Hydrodynamic Characteristics of a Cylindrical Pillar within a Microchannel

ICNMM Technical Paper Publication: InterPACKICNMM2015-48701

John Patrick O'Connor, Stokes Institute, Limerick, Limerick, Ireland, Jeffrey Punch, University Of Limerick, Limerick, Ireland, Nicholas Jeffers, Bell Labs Ireland (Alcatel-Lucent), Dublin, Ireland, Jason Stafford, Bell Labs Ireland, Dublin, Ireland

6-5
Micro/Nano Structures in Phase Change Heat Transfer

6-5-2
Boiling and Condensation

Mezzanine Level, Hunt Room | 1:00pm - 2:30pm

Session Organizer: Matthew McCarthy, Drexel University, Philadelphia, PA, United States

Session Co-Organizer: Nenad Miljkovic, University of Illinois at Urbana-Champaign, Urbana, IL, United States

A State-of-the-art Review on Pool Boiling on Nanostructure Surfaces

ICNMM Technical Paper Publication: InterPACKICNMM2015-48120

Isabela Ignácio, UNESP - University Estadual Paulista, Department of Mechanical Engineering, Ilha Solteira, SP, Brazil, Elaine Maria Cardoso, São Paulo State University UNESP/FEIS, Ilha Solteira, SP, Brazil, José Luiz Gasche, UNESP - Univ Estadual Paulista, Department of Mechanical Engineering, Ilha Solteira, SP, Brazil, Gherhardt Ribatski, University of Sao Paulo, Sao Carlos, Sao Paulo, Brazil

Experimental Research on Condensation outside a Horizontal Tube at Low Mass Fluxes

ICNMM Technical Paper Publication: InterPACKICNMM2015-48203

Wei Li, Zhejiang University, Hang-Zhou City, Zhejiang, China, Xu Chen, Zhejiang University, Hangzhou, Zhejiang, China

Effect of SiO2 Ridge Geometry on CHF Enhancement in Pool Boiling

ICNMM Technical Presentation: InterPACKICNMM2015-48224

An Zou, Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Dropwise Condensation of Low Surface Tension Fluids on iCVD (Initiated Chemical Vapor Deposition) Grafted Polymer Films

ICNMM Technical Presentation: InterPACKICNMM2015-48777

Karim Khalil, MIT, Cambridge, MA, United States, Adam Paxson, MIT Department of Mechanical Engineering, Cambridge, MA, United States, Kripa K. Varanasi, MIT, Cambridge, MA, United States

6-5-3
Films, Droplets, and Particles

Diplomat | 1:00pm - 2:30pm

Session Organizer: Shalabh Maroo, Syracuse University, Syracuse, NY, United States

Experimental Study of Aqueous Binary Mixture Droplet Vaporization on Nanostructured Surfaces

InterPACK Technical Paper Publication: InterPACKICNMM2015-48153

Russell J. LaBrie II, Jorge Padilla Jr., Van P. Carey, University of California, Berkeley, Berkeley, CA, United States

Molecular Dynamics Study on Explosive Boiling of Thin Liquid Argon Film on Nanostructured Surface under Different Wetting Conditions

ICNMM Technical Paper Publication: InterPACKICNMM2015-48352

Sheikh Mohammad Shavik, Mohammad Nasim Hasan, A.K.M. Monjur Morshed, Bangladesh University of Engineering and Technology, Dhaka, Dhaka, Bangladesh

Adsorption-Based Thermal Rectifier

ICNMM Technical Paper Publication: InterPACKICNMM2015-48508

Tadeh Avanessian, Gisuk Hwang, Wichita State University, Wichita, KS, United States

Boiling/Evaporation Characteristics of a Droplet on a Nano-Particles-Accumulated Bi-Porous Layer

InterPACK Technical Paper Publication: InterPACKICNMM2015-48628

Kazuhisa Yuki, Tokyo University of Science-Yamaguchi, Sanyo-Onoda, Yamaguchi, Japan, Katsuki Fukushima, Tokyo University of Science, Yamaguchi, Sanyo-Onoda, Yamaguchi, Japan, Koichi Suzuki, Tokyo University of Science, Yamaguchi, Sanyo-Onoda, Yamaguchi, Japan

Metal Surface Wettability Manipulation by Nanoparticle Deposition during Nanofluid Boiling

ICNMM Technical Paper Publication: InterPACKICNMM2015-48687

Feini Zhang, University of Illinois at Urbana Champaign, Urbana, IL, United States, Anthony Jacobi, University of Illinois, Urbana, IL, United States

TECHNOLOGY UPDATE TALKS

10-1
Technology Update Talks

10-1-9
Thermal Challenges in Recent Advancements in GaN Electronics

Lobby Level, French Room | 1:00pm - 2:30pm

Session Organizer: Samuel Graham, Georgia Tech, Atlanta, GA, United States

Novel Thermal Management of GaN Electronics: Diamond Substrates

InterPACK Technical Paper Publication: InterPACKICNMM2015-48145

Martin Kuball, James Pomeroy, Julian Anaya Calvo, Huarui Sun, Roland B Simon, University of Bristol, Bristol, United Kingdom, Daniel Francis, Firooz Faili, Daniel Twitchen, Element Six Technologies, Santa Clara, CA, United States, Stefano Rossi, Mohammed Alomari, Erhard Kohn, University of Ulm, Ulm, Germany, Lajos Toth, Bela Pecz, MFA, Budapest, Hungary

Near Junction Transport and the Limits of Electronics Cooling

InterPACK Technical Presentation: InterPACKICNMM2015-48694

Kenneth Goodson, Stanford University, Stanford, CA, United States, Damena D. Agonafer, Stanford University, Stanford, CA, United States, Mehdi Asheghi, Stanford University, Emeryville, CA, United States, Michael Barako, Carnegie Mellon University, Pittsburgh, PA, United States, Jungwan Cho, Stanford University, Stanford, CA, United States, Catherine Gorle, Columbia University, New York, NY, United States, Farzad Houshmand, Tanya Liu, James Palko, Juan Santiago, Aditya Sood, Yoonjin Won, Chi Zhang, Stanford University, Stanford, CA, United States

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48655	Diffcode a System for the Simulation of Diffusion Driven Phase Evolution in Solids	SUBRAMANYA	SADASIVA
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48655	Diffcode a System for the Simulation of Diffusion Driven Phase Evolution in Solids	Ganesh	Subbarayan
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48744	Numerical Analysis of Allowable Current Density for Electromigration of Interconnect Tree Structure With Reservoir	Kazuhiro	Fujisaki
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48744	Numerical Analysis of Allowable Current Density for Electromigration of Interconnect Tree Structure With Reservoir	Hikaru	Narita
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48744	Numerical Analysis of Allowable Current Density for Electromigration of Interconnect Tree Structure With Reservoir	Kazuhiko	Sasagawa
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48746	Damage Observation of CNT Networked Structure under High Current Density	Daiki	Narita
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48795	Reliability of Interconnections Made of Sintered Silver Nano Particles	Przemyslaw K.	Matkowski
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48795	Reliability of Interconnections Made of Sintered Silver Nano Particles	Tomasz	Falat
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48795	Reliability of Interconnections Made of Sintered Silver Nano Particles	Andrzej	Moscicki
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48208	Investigation of solder joint intermittent failure under vibration environment	Changwoon	Han
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	03:30 PM - 05:00 PM	1-3-1	Reliability Experiment and Simulation of Advanced Inteconnects	InterPACKICN-MM2015-48208	Investigation of solder joint intermittent failure under vibration environment	Hyeonseok	Oh
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Tingge	Xu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Yingjie	Du
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Gyu-ho	Kim
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Huiyang	Luo
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Les	Stark
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Terry	Baughn
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48157	Measurement of Temperature-Dependent Young?s Modulus of Molding Compound at Elevated Temperatures	Hongbing	Lu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48180	Arcing and Spacing Requirements for High Voltage Printed Circuit Boards	Prabjit	Singh
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48639	Chlorine Ion Related Corrosion in Cu-Al Wirebond Microelectronic Packages	Pradeep	Lall
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48639	Chlorine Ion Related Corrosion in Cu-Al Wirebond Microelectronic Packages	Yihua	Luo

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48639	Chlorine Ion Related Corrosion in Cu-Al Wirebond Microelectronic Packages	Luu	Nguyen
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Joao	Costa
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Delfim	Soares
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Senhorinha	Teixeira
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Fatima	Cerqueira
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Francisco	Macedo
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Nelson	Rodrigues
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Luis	Ribas
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48720	Modeling the Reflow Soldering Process in PCB?s	Jose Carlos	Teixeira
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48172	Characterization of the Solder Bump Creep Using Nanoindentation	Xiao Hu	Liu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48172	Characterization of the Solder Bump Creep Using Nanoindentation	Thomas	Wassick
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48136	A Study on Strain Concentration around V Notch in Lead Free Solder Material and the Low Cycle Fatigue Life	Takashi	Kawakami
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48136	A Study on Strain Concentration around V Notch in Lead Free Solder Material and the Low Cycle Fatigue Life	Takahiro	Kinoshita
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Monday, July 06, 2015	05:30 PM - 07:00 PM	1-3-2	Materials Characterization and Modeling in Advanced Interconnect Technologies	InterPACKICN-MM2015-48136	A Study on Strain Concentration around V Notch in Lead Free Solder Material and the Low Cycle Fatigue Life	Hirokazu	Oriyama
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48124	Reliability Implications of Thermo-mechanically and Electrically Induced Interfacial Sliding of Through-Silicon Vias in 3D Packages	Lutz	Meinshausen
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48124	Reliability Implications of Thermo-mechanically and Electrically Induced Interfacial Sliding of Through-Silicon Vias in 3D Packages	Ming	Liu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48124	Reliability Implications of Thermo-mechanically and Electrically Induced Interfacial Sliding of Through-Silicon Vias in 3D Packages	Tae Kyu	Lee
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48124	Reliability Implications of Thermo-mechanically and Electrically Induced Interfacial Sliding of Through-Silicon Vias in 3D Packages	Indranath	Dutta
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48124	Reliability Implications of Thermo-mechanically and Electrically Induced Interfacial Sliding of Through-Silicon Vias in 3D Packages	Li	Li
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48088	Thermal Design Analysis of 2.5-D Packages with Analytical TSV Submodels	H.Y.	Zhang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48088	Thermal Design Analysis of 2.5-D Packages with Analytical TSV Submodels	W.H.	Zhu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48088	Thermal Design Analysis of 2.5-D Packages with Analytical TSV Submodels	Leon	Lin
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48088	Thermal Design Analysis of 2.5-D Packages with Analytical TSV Submodels	Xiao	Yan
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48656	Analysis of Interfacial Shear Stress and Risk of Debonding in TSVs	Anirudh	Udupa
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48656	Analysis of Interfacial Shear Stress and Risk of Debonding in TSVs	Cheng-Kok	Koh
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48811	Chip Package Interaction Study to Analyze the Mechanical Integrity of a 3-D TSV Package using Compact Modeling	Pavan	Rajamane
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48811	Chip Package Interaction Study to Analyze the Mechanical Integrity of a 3-D TSV Package using Compact Modeling	Fahad	Mirza
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48811	Chip Package Interaction Study to Analyze the Mechanical Integrity of a 3-D TSV Package using Compact Modeling	Hassaan	Khan
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	1-2-1	TSVs in 2.5D and 3D Packaging	InterPACKICN-MM2015-48811	Chip Package Interaction Study to Analyze the Mechanical Integrity of a 3-D TSV Package using Compact Modeling	Dereje	Agonafer
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48125	Fracture Mechanisms in Sn-Ag-Cu Solder Micro-Bumps for 3D Microelectronic Packages	Babak	Talebanpour
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48323	Microstructural Stability of Au-Sn SLID Joints for Harsh Environments	Pedro	Quintero
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48323	Microstructural Stability of Au-Sn SLID Joints for Harsh Environments	Paola	Rivera Soto
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48323	Microstructural Stability of Au-Sn SLID Joints for Harsh Environments	Mellyssa	Mulero
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48323	Microstructural Stability of Au-Sn SLID Joints for Harsh Environments	Dimeji	Ibitayo
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48197	Improvement of Thermal Conductivity of Electroplated Copper Interconnections by Controlling Their Crystallinity	Masaru	Gotoh
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48577	High Temperature Shear Strength of Cu-Sn Transient Liquid Phase Sintered Interconnects	Hannes	Greve
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48197	Improvement of Thermal Conductivity of Electroplated Copper Interconnections by Controlling Their Crystallinity	Ken	Suzuki
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48577	High Temperature Shear Strength of Cu-Sn Transient Liquid Phase Sintered Interconnects	Seyed Ali	Moeini
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48197	Improvement of Thermal Conductivity of Electroplated Copper Interconnections by Controlling Their Crystallinity	Hideo	Miura
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48577	High Temperature Shear Strength of Cu-Sn Transient Liquid Phase Sintered Interconnects	Patrick	McCluskey
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48577	High Temperature Shear Strength of Cu-Sn Transient Liquid Phase Sintered Interconnects	Shailesh	Joshi
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	Chaobo	Shen

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48387	Attributes of Advanced Thinning and Planarization Processes in 2.5D and 3D Packaging Recognized by Market Demands	FRANK	WEI
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	Cong	Zhao
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	Zhou	Hai
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	Jiawei	Zhang
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	Michael	Bozack
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	John	Evans
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48009	Reliability Analysis of Aging in Joint Microstructures for Sn-Ag-Cu Solder Joints During Thermal Cycling	J. C.	Suhling
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48168	Warpage Hysteresis Estimation of an Electronic Package During a Thermal Cycle	Toru	Ikeda
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48578	Physics Based Requirements for Qualification of BGA Components in Temperature Cycling	Ru	Han
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48168	Warpage Hysteresis Estimation of an Electronic Package During a Thermal Cycle	Akiko	Ozaki
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48578	Physics Based Requirements for Qualification of BGA Components in Temperature Cycling	Milena	Vujosevic
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48168	Warpage Hysteresis Estimation of an Electronic Package During a Thermal Cycle	Takuya	Hatao
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48578	Physics Based Requirements for Qualification of BGA Components in Temperature Cycling	Min	Pei
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48168	Warpage Hysteresis Estimation of an Electronic Package During a Thermal Cycle	Noriyuki	Miyazaki
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-2-2	Packaging Challenges in 2.5D/3D and Stacked Packaging	InterPACKICN-MM2015-48200	Improvement of the Long-Term Reliability of Interconnection by Controlling the Crystallinity of Grain Boundaries	Takahiro	Nakanishi
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48620	FEA Based Reliability Predictions for PBGA Packages Subjected to Isothermal Aging Prior to Thermal Cycling	Munshi	Basit
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48620	FEA Based Reliability Predictions for PBGA Packages Subjected to Isothermal Aging Prior to Thermal Cycling	Mohammad	Motalab
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	1-6-4	Temperature Cycling and Aging	InterPACKICN-MM2015-48620	FEA Based Reliability Predictions for PBGA Packages Subjected to Isothermal Aging Prior to Thermal Cycling	Jeffrey C.	Suhling
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48626	Measurement and Simulation of Moisture Induced Die Stresses in Flip Chip on Laminate Assemblies	Quang	Nguyen
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48626	Measurement and Simulation of Moisture Induced Die Stresses in Flip Chip on Laminate Assemblies	Jordan	Roberts
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48626	Measurement and Simulation of Moisture Induced Die Stresses in Flip Chip on Laminate Assemblies	Richard	Jaeger

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48627	Characterization of Die Stresses in Plastic Packages Subjected to Moisture and Thermal Exposures	M. Kaysar	Rahim
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48049	Computational Study of Behavior of Gas Absorption in Data Center Equipment and its Effects on the Rate of Corrosion/Contamination	Tejeshkumar	Bagul
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48049	Computational Study of Behavior of Gas Absorption in Data Center Equipment and its Effects on the Rate of Corrosion/Contamination	Kanan	Pujara
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48049	Computational Study of Behavior of Gas Absorption in Data Center Equipment and its Effects on the Rate of Corrosion/Contamination	Jimil M.	Shah
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48049	Computational Study of Behavior of Gas Absorption in Data Center Equipment and its Effects on the Rate of Corrosion/Contamination	Oluwaseun	Awe
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48351	NanoThermoMechanical Memory: Near-Field Heat Transfer Enabled Negative Differential Thermal Resistance and Thermal Latching	Mahmoud	Elzouka
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	1-6-1	Temperature, Moisture and Harsh Chemicals	InterPACKICN-MM2015-48351	NanoThermoMechanical Memory: Near-Field Heat Transfer Enabled Negative Differential Thermal Resistance and Thermal Latching	Sidy	Ndao
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Christoph	Luechinger
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48688	Photonic sensors for harsh environment monitoring	Miao	Yu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Raymond	Chen
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Jason	Fu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Bernard	Poncelet
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Orlando	Valentin
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Todd	Walker
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48156	Aluminum-Copper Ribbon Interconnects for Power Devices	Tao	Xu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48613	Mechanism and Model of Bond Formation in Ultrasonic Wire Bonding	T. Calvin	Tszeng
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48605	Evaluation of Fatigue Crack Initiation and Propagation in Thin Solder Joints Using a Lap-Joint Shear Specimen With High Stiffness Fixtures	Masayoshi	Kinoshita
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48576	Shock Risk Assessment of BGA Components - Importance of Physics Based Metrics	Helia	Rahmani
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48605	Evaluation of Fatigue Crack Initiation and Propagation in Thin Solder Joints Using a Lap-Joint Shear Specimen With High Stiffness Fixtures	Toshihiko	Sayama
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48605	Evaluation of Fatigue Crack Initiation and Propagation in Thin Solder Joints Using a Lap-Joint Shear Specimen With High Stiffness Fixtures	Hiroyuki	Tsuritani
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48605	Evaluation of Fatigue Crack Initiation and Propagation in Thin Solder Joints Using a Lap-Joint Shear Specimen With High Stiffness Fixtures	Yoshiyuki	Okamoto

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48605	Evaluation of Fatigue Crack Initiation and Propagation in Thin Solder Joints Using a Lap-Joint Shear Specimen With High Stiffness Fixtures	Takao	Mori
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48553	Nondestructive Observation of Thermal Fatigue Crack Propagation in FBGA and Die Attached Solder Joints by Synchrotron Radiation X-Ray Laminography	Takuya	Hanamura
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48669	Influence of Secondary Impact on Failure Modes in PWAs With High Resonant Frequency	Jingshi	Meng
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48812	Analysis of Intermetallic Formation During Ultrasonic Ball Bonding	Panthea	Sepehrband
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48669	Influence of Secondary Impact on Failure Modes in PWAs With High Resonant Frequency	Abhijit	Dasgupta
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48812	Analysis of Intermetallic Formation During Ultrasonic Ball Bonding	Maryam	Gholamirad
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48553	Nondestructive Observation of Thermal Fatigue Crack Propagation in FBGA and Die Attached Solder Joints by Synchrotron Radiation X-Ray Laminography	Takeshi	Takayanagi
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48553	Nondestructive Observation of Thermal Fatigue Crack Propagation in FBGA and Die Attached Solder Joints by Synchrotron Radiation X-Ray Laminography	Kentaro	Uesugi
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48553	Nondestructive Observation of Thermal Fatigue Crack Propagation in FBGA and Die Attached Solder Joints by Synchrotron Radiation X-Ray Laminography	Masato	Hoshino
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48709	Durability of Large Electronic Components Undergoing Multi-Axial Vibratory Excitation	Raman	Sridharan
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48111	An Efficient Bump Pad Design to Mitigate the Flip Chip Package Induced Stress	Mario	Gonzalez
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48275	Evaluation of intensity of singularity at 3D piezoelectric bonded joints using a conservative integral	Chonlada	Luangarpa
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48709	Durability of Large Electronic Components Undergoing Multi-Axial Vibratory Excitation	Ed.	Habtour
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48111	An Efficient Bump Pad Design to Mitigate the Flip Chip Package Induced Stress	Joeri	De Vos
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48275	Evaluation of intensity of singularity at 3D piezoelectric bonded joints using a conservative integral	Hideo	Koguchi
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48111	An Efficient Bump Pad Design to Mitigate the Flip Chip Package Induced Stress	Geert	Van der Plas
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-6-3	Shock, Vibration and Other Harsh Environments	InterPACKICN-MM2015-48709	Durability of Large Electronic Components Undergoing Multi-Axial Vibratory Excitation	Elaine	Lin
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48111	An Efficient Bump Pad Design to Mitigate the Flip Chip Package Induced Stress	Eric	Beyne
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-2	Material Characterization	InterPACKICN-MM2015-48105	Evaluation of the Strength of Interface for Multi-Layered Materials in Photonic Devices	Naoki	Kimura
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48142	Thermal Stress Simulation for 3D SiP with TSV Structure under Unsteady Thermal Loads	Tomoya	Sugiura

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48142	Thermal Stress Simulation for 3D SiP with TSV Structure under Unsteady Thermal Loads	Keiji	Matsumoto
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48142	Thermal Stress Simulation for 3D SiP with TSV Structure under Unsteady Thermal Loads	Sayuri	Kohara
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	07:45 AM - 09:15 AM	1-1-1	Packaging Interconnects	InterPACKICN-MM2015-48142	Thermal Stress Simulation for 3D SiP with TSV Structure under Unsteady Thermal Loads	Yasumitsu	Orii
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48013	Design Optimization in the Integrity of Hermetically Sealed Package	Tse	Wong
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48023	A Method to Eliminate the Effect of Phosphor Sedimentation on LED?s Angular Color Uniformity	Qi	Chen
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48023	A Method to Eliminate the Effect of Phosphor Sedimentation on LED?s Angular Color Uniformity	Run	Hu
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48023	A Method to Eliminate the Effect of Phosphor Sedimentation on LED?s Angular Color Uniformity	Yiman	Wang
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48023	A Method to Eliminate the Effect of Phosphor Sedimentation on LED?s Angular Color Uniformity	Huai	Zheng
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48023	A Method to Eliminate the Effect of Phosphor Sedimentation on LED?s Angular Color Uniformity	Xiaobing	Luo
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48130	Highly Stretchable Interconnects for Flexible Electronics Applications	Yeasir	Arafat
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48130	Highly Stretchable Interconnects for Flexible Electronics Applications	Rahul	Panat
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48155	Mitigation of Tin Whisker Growth by Dopant Addition	Soumik	Banerjee
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48257	An Investigation of Catastrophic Failure in Solid-State Lamps Exposed to Harsh Environment Operational Conditions	Peter	Sakalaukus
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48257	An Investigation of Catastrophic Failure in Solid-State Lamps Exposed to Harsh Environment Operational Conditions	Lynn	Davis
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48155	Mitigation of Tin Whisker Growth by Dopant Addition	Bhaskar	Majumdar
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48503	Improved Flexibility of Alumina Ultra-thin Barrier Films by Nano-Lamination	Ryan	Lewis
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48503	Improved Flexibility of Alumina Ultra-thin Barrier Films by Nano-Lamination	Julie	Slaughter
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48503	Improved Flexibility of Alumina Ultra-thin Barrier Films by Nano-Lamination	Yung Cheng	Lee
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48704	Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics	Kaustubh	Nagarkar
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48664	Modeling and Parametric Study of Light Scattering, Absorption and Emission of Phosphor in a White Light-Emitting Diode	Jiaqi	Wang
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48247	Effects of thermal cycle conditions on thermal fatigue life of substrate with Cu through-hole	Yu	Yamayose
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48704	Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics	Craig	Galligan
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48664	Modeling and Parametric Study of Light Scattering, Absorption and Emission of Phosphor in a White Light-Emitting Diode	Jeffery C. C.	LO

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48247	Effects of thermal cycle conditions on thermal fatigue life of substrate with Cu through-hole	Tetsuya	Kugimiya
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48704	Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics	Michael	Klitzke
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48664	Modeling and Parametric Study of Light Scattering, Absorption and Emission of Phosphor in a White Light-Emitting Diode	Mian	Tao
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48247	Effects of thermal cycle conditions on thermal fatigue life of substrate with Cu through-hole	Kenji	Hirohata
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48704	Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics	James	Rose
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48664	Modeling and Parametric Study of Light Scattering, Absorption and Emission of Phosphor in a White Light-Emitting Diode	Shi-Wei Ricky	LEE
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48247	Effects of thermal cycle conditions on thermal fatigue life of substrate with Cu through-hole	Akihiko	Happoya
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48704	Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics	Binoy	Shah
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48664	Modeling and Parametric Study of Light Scattering, Absorption and Emission of Phosphor in a White Light-Emitting Diode	Feng	Yun
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48247	Effects of thermal cycle conditions on thermal fatigue life of substrate with Cu through-hole	Nobutada	Ohno
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48704	Novel Flexible Interconnects and Packaging for Minimally Invasive Medical Electronics	Donna	Sherman
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48247	Effects of thermal cycle conditions on thermal fatigue life of substrate with Cu through-hole	Masao	Sakane
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48711	Thermal Evaluation Process on Smart Watches	Angel Qian	Han
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48788	Improved Meshing Strategy for Finite Element Modeling of PBGA Thermal Cycling	Chienchih	Chen
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48711	Thermal Evaluation Process on Smart Watches	Nanbo	Kang
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-5-1	Silicon Photonics and LED	InterPACKICN-MM2015-48724	Prognostics Health Management Model for LED Package Failure Under Contaminated Environment	Hao	Zhang
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48707	Mechanical Characterization of Assemblies Bonded With Pressure-Sensitive Adhesives (PSAs)	Hao	Huang
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-4-1	Flexible and Wearable Electronics	InterPACKICN-MM2015-48793	Die-package CO-design challenges and solutions	Herb	Reiter
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48707	Mechanical Characterization of Assemblies Bonded With Pressure-Sensitive Adhesives (PSAs)	Ehsan	Mirbagheri
Advanced Electronics and Photonics: Packaging, Interconnect and Reliability	Thursday, July 09, 2015	01:00 PM - 02:30 PM	1-1-3	Packaging Reliability	InterPACKICN-MM2015-48707	Mechanical Characterization of Assemblies Bonded With Pressure-Sensitive Adhesives (PSAs)	Srini	Boddapati
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48060	Ballistic phonon transport in holey silicon	Jaeho	Lee
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48060	Ballistic phonon transport in holey silicon	Jongwoo	Lim
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48060	Ballistic phonon transport in holey silicon	Peidong	Yang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48100	Mapping Thermal Spectra through Nanoscale Ballistic Transport	Yongjie	Hu
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48281	THERMAL TRANSPORT PROPERTY OF SILICON MEMBRANES WITH ASYM-METRIC POROUS STRUCTURE	Harutoshi	Hagino
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48281	THERMAL TRANSPORT PROPERTY OF SILICON MEMBRANES WITH ASYM-METRIC POROUS STRUCTURE	Koji	Miyazaki
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48573	An Integrated Analysis of Thermal Conductivity Measurement in Silicon Thin Films	Yuqiang	Zeng
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48573	An Integrated Analysis of Thermal Conductivity Measurement in Silicon Thin Films	Amy	Marconnet
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48754	In-Plane Thermal Conductivity Measurements of 20 - 340nm Silicon-On-Insulator Device Layers by Time-Domain Thermoreflectance	Joseph	Feser
Emerging Technology Frontiers	Monday, July 06, 2015	03:00 PM - 05:00 PM	2-5-1	Thermal transport in silicon nanostructures	InterPACKICN-MM2015-48754	In-Plane Thermal Conductivity Measurements of 20 - 340nm Silicon-On-Insulator Device Layers by Time-Domain Thermoreflectance	David G.	Cahill
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48615	Thermal Conductivity Measurements of Nanoscale Embedded Metallic Thin Films	Banafsheh	Barabadi
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48615	Thermal Conductivity Measurements of Nanoscale Embedded Metallic Thin Films	Satish	Kumar
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48615	Thermal Conductivity Measurements of Nanoscale Embedded Metallic Thin Films	Yogendra	Joshi
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48231	Phonon Transmission and Thermal Boundary Conductance at Graphene and Hexagonal Boron Nitride Interface	Zhequan	Yan
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48231	Phonon Transmission and Thermal Boundary Conductance at Graphene and Hexagonal Boron Nitride Interface	Liang	Chen
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48231	Phonon Transmission and Thermal Boundary Conductance at Graphene and Hexagonal Boron Nitride Interface	Mina	Yoon
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48829	Diamond/metal Thermal Boundary Conductance and its impact on potential packaging materials	Christian	Monachon
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48829	Diamond/metal Thermal Boundary Conductance and its impact on potential packaging materials	Ludger	Weber
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Ashutosh	Giri
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	John T.	Gaskins
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Brian	Donovan
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Chester	Szwejkowski
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Ronald	Warzoha
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Mark A.	Rodriguez

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Jon	ihlefeld
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48342	Mechanisms of nonequilibrium electron-phonon coupling and thermal conductance at interfaces	Patrick	Hopkins
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48773	Mitigation of Thermal Resistance in High Power Devices	Yang	Shen
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48773	Mitigation of Thermal Resistance in High Power Devices	Brian	Foley
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48773	Mitigation of Thermal Resistance in High Power Devices	Xiaojun	Xie
Emerging Technology Frontiers	Monday, July 06, 2015	05:30 PM - 07:00 PM	2-5-2	Interfacial thermal transport	InterPACKICN-MM2015-48773	Mitigation of Thermal Resistance in High Power Devices	Joe C.	Campbell
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48693	Carbon Nanotube Network Polymer Nanocomposites as Interconnect Materials in Electronics Packaging	Ajit	Roy
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48693	Carbon Nanotube Network Polymer Nanocomposites as Interconnect Materials in Electronics Packaging	Chenggang	Chen
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48693	Carbon Nanotube Network Polymer Nanocomposites as Interconnect Materials in Electronics Packaging	Sabyasachi	Ganguli
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48693	Carbon Nanotube Network Polymer Nanocomposites as Interconnect Materials in Electronics Packaging	Sergei	Shenogin
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48693	Carbon Nanotube Network Polymer Nanocomposites as Interconnect Materials in Electronics Packaging	Jason R	Foley
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48213	The Contribution of the Bulk Modes on Electrical Conductivity in 3D Topological Insulators	Gulru	Babac
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48474	Error and Uncertainty in Raman Thermal Conductivity Measurements	Thomas	Beechem
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48474	Error and Uncertainty in Raman Thermal Conductivity Measurements	Luke	Yates
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48474	Error and Uncertainty in Raman Thermal Conductivity Measurements	Samuel	Graham
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48587	Characterization of Carbon Nanotube Forest Interfaces Using Time Domain Thermoreflectance	Thomas	Bougher
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48587	Characterization of Carbon Nanotube Forest Interfaces Using Time Domain Thermoreflectance	John	Taphouse
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48587	Characterization of Carbon Nanotube Forest Interfaces Using Time Domain Thermoreflectance	Baratunde	Cola
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48359	Graphene-Encapsulated Copper Nanowires For Improved Thermal Management Of Interconnects	Ruchit	Mehta
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48359	Graphene-Encapsulated Copper Nanowires For Improved Thermal Management Of Interconnects	Sunny	Chugh
Emerging Technology Frontiers	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	2-7-4	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48359	Graphene-Encapsulated Copper Nanowires For Improved Thermal Management Of Interconnects	Zhihong	Chen
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48763	Thermal boundary conductance mechanisms across open-atmo-sphere annealed GaN interfaces and beta-Ga203 thin films	Nicole	Creange
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48763	Thermal boundary conductance mechanisms across open-atmo-sphere annealed GaN interfaces and beta-Ga203 thin films	Costel	Constantin

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48766	Size Effects in the Thermal Conductivity of GaAs/AlAs Superlattices and AlGaAs Alloys for Thermal Management Applications	Ramez	Cheaito
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48766	Size Effects in the Thermal Conductivity of GaAs/AlAs Superlattices and AlGaAs Alloys for Thermal Management Applications	Sadhvikas	Addamane
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48766	Size Effects in the Thermal Conductivity of GaAs/AlAs Superlattices and AlGaAs Alloys for Thermal Management Applications	Thomas J.	Rotter
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48766	Size Effects in the Thermal Conductivity of GaAs/AlAs Superlattices and AlGaAs Alloys for Thermal Management Applications	Ganesh	Balakrishnan
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48794	Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment	Dustin	Kendig
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48794	Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment	Amirkoushyar	Ziabari
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48794	Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment	Kazuaki	Yazawa
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48794	Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment	Ali	Shakouri
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48794	Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment	Alex	Shakouri
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48794	Theoretical and Experimental Noise Analyses in Thermoreflectance Thermal Imaging and Equipment	Bjorn	Vermeersch
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48736	Parallel Measurement of Thermal Conductivity and Convection Coefficient of Micro/Nanowires Based on Steady-State Electro-Raman-Thermal Technique	Man	Li
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48736	Parallel Measurement of Thermal Conductivity and Convection Coefficient of Micro/Nanowires Based on Steady-State Electro-Raman-Thermal Technique	Yanan	Yue
Emerging Technology Frontiers	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	2-5-3	Heat transfer and thermal measurements of nanosystems	InterPACKICN-MM2015-48579	High-Throughput Measurement Platform for Simultaneous Thermal and Thermoelectric Property Characterization	Collier	Miers
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48769	Correlated OLED Thermal Modeling Methods and Thermal Design Recommendations	Carin	Ruiz
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48787	USERS? THERMAL RESPONSE TO A SIMULATED TABLET COMPUTER SURFACE	Han	Zhang
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48787	USERS? THERMAL RESPONSE TO A SIMULATED TABLET COMPUTER SURFACE	Alan	Hedge
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48787	USERS? THERMAL RESPONSE TO A SIMULATED TABLET COMPUTER SURFACE	Beiyuan	Guo
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48523	Development of Heat Transfer Tools for Sizing Flexible Graphite Spreaders in Mobile Applications	Rick	Beyerle
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48523	Development of Heat Transfer Tools for Sizing Flexible Graphite Spreaders in Mobile Applications	Gary	Shives

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48367	Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices	Tannaz	Harirchian
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48367	Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices	Zuyang	Liang
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48367	Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices	Michael	Schroeder
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48367	Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices	Kyle	Yazzie
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48367	Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices	Ashish	Gupta
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48367	Thermal-Mechanical Impacts of Thermal Solutions in Handheld Devices	Alan C	Mcallister
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48831	Ultra Thin-Light Titanium Based Thermal Solution for Portable Electronic Devices	Payam	Bozorgi
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48831	Ultra Thin-Light Titanium Based Thermal Solution for Portable Electronic Devices	George	Fleischman
Emerging Technology Frontiers	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	2-1-1	Advanced Modeling Solutions for Mobile Thermal Management	InterPACKICN-MM2015-48831	Ultra Thin-Light Titanium Based Thermal Solution for Portable Electronic Devices	Carl	Meinhart
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Kraig J.	Olejniczak
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48175	A Method for Thermal Performance Characterization of Ultra-Thin Vapor Chambers Cooled by Natural Convection	Gaurav	Patankar
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Tom	Flint
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48175	A Method for Thermal Performance Characterization of Ultra-Thin Vapor Chambers Cooled by Natural Convection	Simone	Mancin
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	David	Simco
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48175	A Method for Thermal Performance Characterization of Ultra-Thin Vapor Chambers Cooled by Natural Convection	Justin A.	Weibel
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Sergei	Storkov
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48175	A Method for Thermal Performance Characterization of Ultra-Thin Vapor Chambers Cooled by Natural Convection	Mark A.	MacDonald
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Brad	McGee
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48175	A Method for Thermal Performance Characterization of Ultra-Thin Vapor Chambers Cooled by Natural Convection	Suresh V.	Garimella
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Kenny	George

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Peter	Killeen
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Austin	Curbow
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Robert S.	Shaw
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Brandon	Passmore
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48602	System-Level Packaging of Wide Bandgap Inverters for Electric Traction Drive Vehicles	Ty R.	McNutt
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48714	Design Consideration of Packaging a High Voltage Current Switch	Ankan	De
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48331	Thermal effects of mobile and wearable electronics on the human body	Zhizhu	He
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48714	Design Consideration of Packaging a High Voltage Current Switch	Adam	Morgan
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48331	Thermal effects of mobile and wearable electronics on the human body	Jing	Liu
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48714	Design Consideration of Packaging a High Voltage Current Switch	Subhashish	Bhattacharya
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48714	Design Consideration of Packaging a High Voltage Current Switch	Douglas C.	Hopkins
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48108	A Novel Flow Visualization Technique applied to a Closed Loop Pulsating Heat Pipe	Giulia	Spinato
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48818	Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe	Scott	Thompson
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48108	A Novel Flow Visualization Technique applied to a Closed Loop Pulsating Heat Pipe	Navid	Borhani
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48818	Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe	John	Monroe
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48108	A Novel Flow Visualization Technique applied to a Closed Loop Pulsating Heat Pipe	John	Thome
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48818	Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe	Erick	Vasquez
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48818	Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe	Zachary	Aspin
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48818	Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe	Matthew	Berg
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-4-1	Advances in Packaging and Characterization	InterPACKICN-MM2015-48818	Thermal-to-Electrical Energy Conversion and Enhanced Heat Transfer with a Ferrofluid Oscillating Heat Pipe	Keisha	Walters
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48360	Thermal Management of Portable Electronic Devices Utilizing Latent Heat Sink (LHS) Materials	Mark	Hartmann
Emerging Technology Frontiers	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	2-1-2	Advanced Tehnologies for Mobile Thermal Management	InterPACKICN-MM2015-48385	Latent Heat Storage Based Thermal Management Materials for Lithium-ion Batteries	Joe	Kelly
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48335	Software based thermal management in mobile 3G/4G devices	Kenan	Kocagoez
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48029	Modular Flow Structure Design for a Single-Phase Manifold Microchannel Cold Plate	Feng	Zhou

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48029	Modular Flow Structure Design for a Single-Phase Manifold Microchannel Cold Plate	Yan	Liu
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48029	Modular Flow Structure Design for a Single-Phase Manifold Microchannel Cold Plate	Yanghe	Liu
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48029	Modular Flow Structure Design for a Single-Phase Manifold Microchannel Cold Plate	Ercan	Dede
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48563	Thermal Performance Enhancement of Glass Interposers	Sangbeom	Cho
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48041	Graphene modified micro heat pipe for LED modules	Yi	Luo
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48462	Characterization of Contact and Bulk Thermal Resistance of Laminations for Electric Machines	J. Emily	Cousineau
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48041	Graphene modified micro heat pipe for LED modules	Liangliang	Zou
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48462	Characterization of Contact and Bulk Thermal Resistance of Laminations for Electric Machines	Kevin	Bennion
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48041	Graphene modified micro heat pipe for LED modules	Beike	Yu
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48462	Characterization of Contact and Bulk Thermal Resistance of Laminations for Electric Machines	Douglas	DeVoto
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48041	Graphene modified micro heat pipe for LED modules	Chuanpeng	Zhou
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48462	Characterization of Contact and Bulk Thermal Resistance of Laminations for Electric Machines	Sreekant	Narumanchi
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48041	Graphene modified micro heat pipe for LED modules	Dazhi	Wang
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48041	Graphene modified micro heat pipe for LED modules	Xiaodong	Wang
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48625	Non-Intrusive Case Temperature Measurement Method of Direct-Water-Cooled Power Module	Keisuke	Horiuchi
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48835	Approaches Towards the Ultimate Luminous Output Power of Light-Emitting Diodes: Bottlenecks and Remedies	Xiaokun	Zhang
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48625	Non-Intrusive Case Temperature Measurement Method of Direct-Water-Cooled Power Module	Yuichiro	Konishi
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48835	Approaches Towards the Ultimate Luminous Output Power of Light-Emitting Diodes: Bottlenecks and Remedies	Xiao-Dong	Xiang
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48625	Non-Intrusive Case Temperature Measurement Method of Direct-Water-Cooled Power Module	Atsuo	Nishihara
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-1-3	Thermal Management of Mobile and Optoelectronic Devices	InterPACKICN-MM2015-48835	Approaches Towards the Ultimate Luminous Output Power of Light-Emitting Diodes: Bottlenecks and Remedies	Yong	Xiang
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48551	Thermal Characterization of GaN HEMTs via Thermal-Reflectance Imaging	Yuhao	Zhang
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48551	Thermal Characterization of GaN HEMTs via Thermal-Reflectance Imaging	Tomas	Palacios
Emerging Technology Frontiers	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	2-4-2	Advances in Packaging, Characterization and Liquid Cooling	InterPACKICN-MM2015-48551	Thermal Characterization of GaN HEMTs via Thermal-Reflectance Imaging	Evelyn N.	Wang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48253	Characterization of AlGaN/GaN HEMTs using Gate Resistance Thermometry	Georges	Pavlidis
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48020	Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams	Francesco	Agostini
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48253	Characterization of AlGaN/GaN HEMTs using Gate Resistance Thermometry	Eric	Heller
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48020	Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams	Waylon	Puckett
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48253	Characterization of AlGaN/GaN HEMTs using Gate Resistance Thermometry	Donald	Dorsey
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48020	Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams	Ryan	Nelson
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48253	Characterization of AlGaN/GaN HEMTs using Gate Resistance Thermometry	Michael D.	Hodge
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48020	Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams	Daniele	Torresin
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48253	Characterization of AlGaN/GaN HEMTs using Gate Resistance Thermometry	Rama	Vetury
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48020	Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams	Bruno	Agostini
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48020	Experimental Investigation of Enhanced Two-Phase Evaporator Using Aluminum Foams	Mathieu	Habert
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48691	Thermal Characterization Of Nanocrystalline Diamond Films On Silicon	Jungwan	Cho
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48691	Thermal Characterization Of Nanocrystalline Diamond Films On Silicon	Fariah	Hayee
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48031	Characterisation of a Novel Pulsating Heat Pipe Cooler for Power Electronics at Extreme Ambient Temperatures	Violette	Mounier
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48211	GaN-on-Diamond Thermal Management Technology	Felix	Ejeckam
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48211	GaN-on-Diamond Thermal Management Technology	Daniel	Francis
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48382	Convective Heat Transfer Coefficients of Automatic Transmission Fluid Jets with Implications for Electric Machine Thermal Management	Gilberto	Moreno
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48211	GaN-on-Diamond Thermal Management Technology	Daniel	Twitchen
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48211	GaN-on-Diamond Thermal Management Technology	Bruce	Bolliger
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48211	GaN-on-Diamond Thermal Management Technology	Firooz	Faili
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48495	GaN on Diamond Technology: Challenges and Impact of Next Generation GaN	Matthew	Tyhach
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48516	Centrifugally Pumped Thermosiphons for Motor Rotor Cooling	Seth	McElhinney
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48495	GaN on Diamond Technology: Challenges and Impact of Next Generation GaN	David	Altman
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48516	Centrifugally Pumped Thermosiphons for Motor Rotor Cooling	Timothy	Shedd
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48495	GaN on Diamond Technology: Challenges and Impact of Next Generation GaN	Steven	Bernstein

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-4-3	Advances in Liquid and Two-Phase Cooling Techniques and Characterization	InterPACKICN-MM2015-48516	Centrifugally Pumped Thermosiphons for Motor Rotor Cooling	Thomas M.	Jahns
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Sukwon	Choi
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Gregory M.	Peake
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Gordon A.	Keeler
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Kent M.	Geib
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Ronald D.	Briggs
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Jascinda	Clevenger
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Gary A.	Patrizi
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	John F.	Klem
Emerging Technology Frontiers	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	2-3-1	Advanced Thermal Management and Metrology I	InterPACKICN-MM2015-48713	Thermal Management of Heterogeneously Integrated III-V HBT/Si CMOS Modules	Christopher	Nordquist
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48179	Development of a Diamond Microfluidics-Based Intra-Chip Cooling Technology for GaN	Anurag	Gupta
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Geoffrey	Campbell
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48319	Design of Practical Liquid Metal Cooling System for High Power LED Lamp in Outdoor Use	Sheng-Fu	MEI
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Henry	Eppich
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48319	Design of Practical Liquid Metal Cooling System for High Power LED Lamp in Outdoor Use	Zhong-Shan	DENG
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Keith	Lang
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Carlton	Creamer
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Thomas	Yurovchak
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Kanin	Chu
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Adonis	Kassinos
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Michael	Ohadi
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Amir	Shooshtari
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48429	Advanced Cooling Designs for GaN-on-Diamond MMICs	Serguei	Dessiatoun
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48674	Electrical, Photonic, and Thermal Integration Technologies for Heterogeneous Electronics	Muhannad	Bakir
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48445	Robust Data Acquisition for Building Lighting Systems	Zachary	Pearson

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48445	Robust Data Acquisition for Building Lighting Systems	Tanya	Crenshaw
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48445	Robust Data Acquisition for Building Lighting Systems	Heather	Dillon
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48445	Robust Data Acquisition for Building Lighting Systems	Erik	Paulson
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48445	Robust Data Acquisition for Building Lighting Systems	Nick	Warlen
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48739	Impingement Cooled Embedded Diamond GaN HEMTs	Vincent	Gambin
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48635	Analyzing Temperature Changes in Powered LEDs by Combining Thermal and Radiometric Characterization With Computational Fluid Dynamics	Boris	Marovic
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48739	Impingement Cooled Embedded Diamond GaN HEMTs	Benjamin	Poust
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48635	Analyzing Temperature Changes in Powered LEDs by Combining Thermal and Radiometric Characterization With Computational Fluid Dynamics	Mathew	Clark
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48739	Impingement Cooled Embedded Diamond GaN HEMTs	Monte	Watanabe
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48635	Analyzing Temperature Changes in Powered LEDs by Combining Thermal and Radiometric Characterization With Computational Fluid Dynamics	James	Petroski
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48739	Impingement Cooled Embedded Diamond GaN HEMTs	Dino	Ferizovic
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48739	Impingement Cooled Embedded Diamond GaN HEMTs	Aaron	Oki
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48739	Impingement Cooled Embedded Diamond GaN HEMTs	Mike	Wojtowicz
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48256	The Temperature and Deformation Response of AlGaN/GaN HEMTs Under RF Operating Conditions	Jason	Jones
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48747	Thermal managements in quantum cascade lasers and frequency combs	Jerome	Faist
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48256	The Temperature and Deformation Response of AlGaN/GaN HEMTs Under RF Operating Conditions	Matthew	Rosenberger
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-3-2	Advanced Thermal Management and Metrology II	InterPACKICN-MM2015-48256	The Temperature and Deformation Response of AlGaN/GaN HEMTs Under RF Operating Conditions	William	King
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Sevket	Yuruker
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Enes	Tamdogan
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Mehmet	Arik
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Rustamjon	Melikov
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Ilkem	Durak

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Daniel	Press
Emerging Technology Frontiers	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	2-2-1	Thermal Mangement of LEDs	InterPACKICN-MM2015-48326	Thermal and Optical Performance of Eco-Friendly Silk Fibroin Proteins as a Cavity Encapsulation Over LED Systems	Sedat	Nizamoglu
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48239	Effect of Three Dimensional Strain on the Electronic Properties of Graphene Nanoribbons	Meng	Yang
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48239	Effect of Three Dimensional Strain on the Electronic Properties of Graphene Nanoribbons	Masato	Ohnishi
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48297	Thermal conductivity of phonon modes in graphene nanoribbon at localized high heating	Tatiana	Zolotoukhina
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48340	Parameter Estimation from Thermore-flectance Measurements	Jia	Yang
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48340	Parameter Estimation from Thermore-flectance Measurements	Aaron	Schmidt
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Prabhakar	Marepalli
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Yu	Huang
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Mir Mohammad	Sadeghi
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Saungeun	Park
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Deji	Akinwande
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Li	Shi
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48372	Modeling of Thermal Transport in Flexible Electronics	Jayathi	Murthy
Emerging Technology Frontiers	Thursday, July 09, 2015	07:45 AM - 09:15 AM	2-7-2	Graphene Characterization & Applications	InterPACKICN-MM2015-48444	Thermal Boundary Conductance at Metal-Graphene-Metal Interfaces using Time-domain Thermoreflectance Method	David B.	Brown
Emerging Technology Frontiers	Thursday, July 09, 2015	09:30 AM - 11:00 AM	2-7-1	CNT Characterization & Applications	InterPACKICN-MM2015-48185	Numerical Investigation of Electrical and Thermal Transport in Carbon Nanotube Array Transistors	Man Prakash	Gupta
Emerging Technology Frontiers	Thursday, July 09, 2015	09:30 AM - 11:00 AM	2-7-1	CNT Characterization & Applications	InterPACKICN-MM2015-48519	Role of Molecule Desorption in the Thermal and Electrical Properties of Carbon Nanotube Networks	Milad	Yarali
Emerging Technology Frontiers	Thursday, July 09, 2015	09:30 AM - 11:00 AM	2-7-1	CNT Characterization & Applications	InterPACKICN-MM2015-48519	Role of Molecule Desorption in the Thermal and Electrical Properties of Carbon Nanotube Networks	Ji	Hao
Emerging Technology Frontiers	Thursday, July 09, 2015	09:30 AM - 11:00 AM	2-7-1	CNT Characterization & Applications	InterPACKICN-MM2015-48519	Role of Molecule Desorption in the Thermal and Electrical Properties of Carbon Nanotube Networks	Mohammad	Khodadadi
Emerging Technology Frontiers	Thursday, July 09, 2015	09:30 AM - 11:00 AM	2-7-1	CNT Characterization & Applications	InterPACKICN-MM2015-48519	Role of Molecule Desorption in the Thermal and Electrical Properties of Carbon Nanotube Networks	Yung Joon	Jung
Emerging Technology Frontiers	Thursday, July 09, 2015	09:30 AM - 11:00 AM	2-7-1	CNT Characterization & Applications	InterPACKICN-MM2015-48519	Role of Molecule Desorption in the Thermal and Electrical Properties of Carbon Nanotube Networks	Anastassios	Mavrokefalos
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48567	Investigation of Liquid Metal Ohmic Contacts for Graphene Photonic Devices	Richard	Ordonez
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48567	Investigation of Liquid Metal Ohmic Contacts for Graphene Photonic Devices	Noah	Acosta

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48567	Investigation of Liquid Metal Ohmic Contacts for Graphene Photonic Devices	Jordan	Melcher
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48567	Investigation of Liquid Metal Ohmic Contacts for Graphene Photonic Devices	Nackieb	Kamin
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48567	Investigation of Liquid Metal Ohmic Contacts for Graphene Photonic Devices	David	Garmire
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48236	MoS2 Transistors Integrated with Microfluidic Structures for Biosensing Applications	Xiaogan	Liang
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48236	MoS2 Transistors Integrated with Microfluidic Structures for Biosensing Applications	Hongsuk	Nam
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48236	MoS2 Transistors Integrated with Microfluidic Structures for Biosensing Applications	Bo-Ram	Oh
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48236	MoS2 Transistors Integrated with Microfluidic Structures for Biosensing Applications	Pengyu	Chen
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48236	MoS2 Transistors Integrated with Microfluidic Structures for Biosensing Applications	Katsuo	Kurabayashi
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48465	Aluminum Nitride Nano-Plate Resonators for High Performance Infrared Sensing	Yu	Hui
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48465	Aluminum Nitride Nano-Plate Resonators for High Performance Infrared Sensing	Zhenyun	Qian
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48465	Aluminum Nitride Nano-Plate Resonators for High Performance Infrared Sensing	Matteo	Rinaldi
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48521	High-Temperature Characterization of AlGaN/GaN High Electron Mobility Pressure Sensors	Caitlin A.	Chapin
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48521	High-Temperature Characterization of AlGaN/GaN High Electron Mobility Pressure Sensors	Junhao	Chen
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48521	High-Temperature Characterization of AlGaN/GaN High Electron Mobility Pressure Sensors	Debbie G.	Senesky
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48790	Survivability of MEMS Accelerometer Under Sequential Thermal and High-G Mechanical Shock Environments	Amrit	Abrol
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48790	Survivability of MEMS Accelerometer Under Sequential Thermal and High-G Mechanical Shock Environments	Jessica	Glover
MEMS and NEMS	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	3-1-1	N/MEMS Sensors & Actuators (Part I)	InterPACKICN-MM2015-48790	Survivability of MEMS Accelerometer Under Sequential Thermal and High-G Mechanical Shock Environments	Lee	Simpson
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48232	NEM Switches for Ultra-Low-Power Computation and Information Storage	Tsu-Jae	Liu
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48394	Piezoelectric Micromachined Ultrasonic Transducers: Towards Ultrasound in Consumer Electronics	David	Horsley
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48394	Piezoelectric Micromachined Ultrasonic Transducers: Towards Ultrasound in Consumer Electronics	Yipeng	Lu
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48394	Piezoelectric Micromachined Ultrasonic Transducers: Towards Ultrasound in Consumer Electronics	Ofer	Rozen
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48394	Piezoelectric Micromachined Ultrasonic Transducers: Towards Ultrasound in Consumer Electronics	Hao-Yen	Tang

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MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48394	Piezoelectric Micromachined Ultrasonic Transducers: Towards Ultrasound in Consumer Electronics	Bernhard	Boser
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48733	CMUTs in permanent contact operation for high output pressure	Min-Chieh	Ho
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48733	CMUTs in permanent contact operation for high output pressure	Maik	Hoffmann
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48733	CMUTs in permanent contact operation for high output pressure	Alexander	Unger
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48733	CMUTs in permanent contact operation for high output pressure	Kwan Kyu	Park
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48733	CMUTs in permanent contact operation for high output pressure	Mario	Kupnik
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48733	CMUTs in permanent contact operation for high output pressure	Butrus T	Khuri-Yakub
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48133	A Microfluidic-Based Tactile Sensor for 3-DOF Force/Torque Detection	Yichao	Yang
MEMS and NEMS	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	3-1-2	N/MEMS Sensors & Actuators (Part II)	InterPACKICN-MM2015-48133	A Microfluidic-Based Tactile Sensor for 3-DOF Force/Torque Detection	Zhili	Hao
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-1-3	Advances in MEMS Resonators and Resonator Modeling	InterPACKICN-MM2015-48384	Monolithic MEMS + Photonic Systems	Sunil	Bhave
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48820	Micro-Stereolithography of Three-dimensional Polymeric Springs for Vibration Energy Harvesting	Cheng	Sun
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-1-3	Advances in MEMS Resonators and Resonator Modeling	InterPACKICN-MM2015-48391	Numerical Method for Investigating Thermal Nonlinearity in Lithium Niobate Micro-Resonators	Ruochen	Lu
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48081	Power limits of rotational and translational inertial power harvesters in typical vibration environments	Igor	Bargatin
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-1-3	Advances in MEMS Resonators and Resonator Modeling	InterPACKICN-MM2015-48391	Numerical Method for Investigating Thermal Nonlinearity in Lithium Niobate Micro-Resonators	Songbin	Gong
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48081	Power limits of rotational and translational inertial power harvesters in typical vibration environments	Akshay	Ananthakrishnan
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48081	Power limits of rotational and translational inertial power harvesters in typical vibration environments	Inna	Kozinsky
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-1-3	Advances in MEMS Resonators and Resonator Modeling	InterPACKICN-MM2015-48526	Fast Spurious Mode Prediction for Piezoelectric MEMS Resonator Design	Rahul	Jhaveri
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48552	Zinc/Copper Hexacyanoferrate based High Potential Dual Ion Battery with High Rate Capability and Long Cycle Life	Tanya	Gupta
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-1-3	Advances in MEMS Resonators and Resonator Modeling	InterPACKICN-MM2015-48526	Fast Spurious Mode Prediction for Piezoelectric MEMS Resonator Design	Sandipan	Maity
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48552	Zinc/Copper Hexacyanoferrate based High Potential Dual Ion Battery with High Rate Capability and Long Cycle Life	Andrew	Kim
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-1-3	Advances in MEMS Resonators and Resonator Modeling	InterPACKICN-MM2015-48526	Fast Spurious Mode Prediction for Piezoelectric MEMS Resonator Design	Mattan	Kamon
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48552	Zinc/Copper Hexacyanoferrate based High Potential Dual Ion Battery with High Rate Capability and Long Cycle Life	Benjamin	Hertzberg
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48552	Zinc/Copper Hexacyanoferrate based High Potential Dual Ion Battery with High Rate Capability and Long Cycle Life	Mylad	Chamoun
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48560	Spray-Coated Flexible Hexacyanoferrate Electrodes With Neutral Electrolytes For Wearable Batteries	Barry	Van Tassell

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48560	Spray-Coated Flexible Hexacyano-ferrate Electrodes With Neutral Electrolytes For Wearable Batteries	Dan	Steingart
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48610	In-operando Non-destructive Ultrasonic Interrogation of Structure in Batteries	Shoham	Bhadra
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48610	In-operando Non-destructive Ultrasonic Interrogation of Structure in Batteries	Peter J.	Gjeltema
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48610	In-operando Non-destructive Ultrasonic Interrogation of Structure in Batteries	Alexandre	Goy
MEMS and NEMS	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	3-2-1	Energy Harvesting Systems, Batteries & Supercapacitors	InterPACKICN-MM2015-48610	In-operando Non-destructive Ultrasonic Interrogation of Structure in Batteries	Jason W.	Fleischer
MEMS and NEMS	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	3-1-4	RF MEMS	InterPACKICN-MM2015-48873	Low Power MEMS-Enabled Wireless Transceivers	Clark T.-C.	Nguyen
MEMS and NEMS	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	3-1-4	RF MEMS	InterPACKICN-MM2015-48580	Solid-State MEMS in Standard ICs	Dana	Weinstein
MEMS and NEMS	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	3-1-4	RF MEMS	InterPACKICN-MM2015-48455	Reconfigurable Aluminum Nitride RF MEMS Resonators Using Monolithical-ly Integrated Phase Change Material Switches	Gwendolyn	Hummel
MEMS and NEMS	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	3-1-4	RF MEMS	InterPACKICN-MM2015-48188	Anchor Loss Suppression for AlN Lamb Wave Resonators	Jie	Zou
MEMS and NEMS	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	3-1-4	RF MEMS	InterPACKICN-MM2015-48188	Anchor Loss Suppression for AlN Lamb Wave Resonators	C.-M.	Lin
MEMS and NEMS	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	3-1-4	RF MEMS	InterPACKICN-MM2015-48188	Anchor Loss Suppression for AlN Lamb Wave Resonators	Albert	Pisano
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48409	Inductive Coupled Plasma Etching of High Aspect Ratio Silicon Carbide Microchannels for Localized Cooling	Karen	Dowling
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48409	Inductive Coupled Plasma Etching of High Aspect Ratio Silicon Carbide Microchannels for Localized Cooling	Ateeq	Suria
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48409	Inductive Coupled Plasma Etching of High Aspect Ratio Silicon Carbide Microchannels for Localized Cooling	Ashwin	Shankar
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48409	Inductive Coupled Plasma Etching of High Aspect Ratio Silicon Carbide Microchannels for Localized Cooling	Hyoungsoon	Lee
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	Azadeh	Moini
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	Amin	Nikoozadeh
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	Jung Woo	Choe
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	Chienliu	Chang
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	Doug	Stephens
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	Lowell S.	Smith

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MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48611	Fabrication, Packaging, and Catheter Assembly of 2D CMUT Arrays for Endoscopic Ultrasound and Cardiac Imaging	David	Sahn
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48814	Atomic layer Deposited TiO2 as Sacri-ficial Layers and Internal Coatings for Nanoscale Gaps	Li-Anne	Liew
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48814	Atomic layer Deposited TiO2 as Sacri-ficial Layers and Internal Coatings for Nanoscale Gaps	Ching-Yi	Lin
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48814	Atomic layer Deposited TiO2 as Sacri-ficial Layers and Internal Coatings for Nanoscale Gaps	Alexander	Yersak
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48814	Atomic layer Deposited TiO2 as Sacri-ficial Layers and Internal Coatings for Nanoscale Gaps	Ryan J.,	Lewis
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48814	Atomic layer Deposited TiO2 as Sacri-ficial Layers and Internal Coatings for Nanoscale Gaps	Collin	Coolidge
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48768	Design and Fabrication of a Polyimide Based MEMS Single Refrigerant Joule-Thomson Micro Cooler	Ray	Radebaugh
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48768	Design and Fabrication of a Polyimide Based MEMS Single Refrigerant Joule-Thomson Micro Cooler	Yizi	Xu
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48768	Design and Fabrication of a Polyimide Based MEMS Single Refrigerant Joule-Thomson Micro Cooler	Victor	Bright
MEMS and NEMS	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	3-3-1	Advanced Fabrication, Packag-ing, & Assembly Technology	InterPACKICN-MM2015-48768	Design and Fabrication of a Polyimide Based MEMS Single Refrigerant Joule-Thomson Micro Cooler	Peter	Bradley
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48729	Graphene NEMS: from quantum Hall effect to Gangnam Style	Changyao	Chen
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48431	Controlled Hierarchical Growth of Nanowires by Surface Modification using Atomic Layer Deposition	Neil	Dasgupta
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48431	Controlled Hierarchical Growth of Nanowires by Surface Modification using Atomic Layer Deposition	Ashley R.	Bielinski
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48431	Controlled Hierarchical Growth of Nanowires by Surface Modification using Atomic Layer Deposition	Eric	Kazyak
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48431	Controlled Hierarchical Growth of Nanowires by Surface Modification using Atomic Layer Deposition	Christian M.	Schlepütz
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48590	Molybdenum Disulfide (MoS2) Nano-mechanical Resonators Integrated on Microchannels	Rui	Yang
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48590	Molybdenum Disulfide (MoS2) Nano-mechanical Resonators Integrated on Microchannels	Zhenyu	Li
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48590	Molybdenum Disulfide (MoS2) Nano-mechanical Resonators Integrated on Microchannels	Philip	Feng
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48286	Two-dimensional monolayer MX2 (M=Mo, W; X=S, Se) synthesis, char-acterization and device applications	Bin	Xiang
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48286	Two-dimensional monolayer MX2 (M=Mo, W; X=S, Se) synthesis, char-acterization and device applications	Lei	Yang
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48286	Two-dimensional monolayer MX2 (M=Mo, W; X=S, Se) synthesis, char-acterization and device applications	Jian	Huang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
MEMS and NEMS	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	3-4-1	Carbon/graphene, Atomic Layer, & 2D Semiconductor Based Systems	InterPACKICN-MM2015-48286	Two-dimensional monolayer MX2 (M=Mo, W; X=S, Se) synthesis, characterization and device applications	Qi	Fu
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48896	Low-cost bioMEMS ? Unconventional Methods and Materials	Karl F.	Bohringer
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48457	Mechanical Shock Reliability Analysis and Multiphysics Modeling of MEMS Accelerometers in Harsh Environments	Nakul	Kothari
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48086	Shrinkage of Post-Cure Die Attach Adhesives During Isothermal Storage	Ruiyang	Liu
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48021	Polymer-based High Throughput Immunoassay Chip Using Porous Monoliths and Gold Nanoparticles	Jun-You	Chen
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48086	Shrinkage of Post-Cure Die Attach Adhesives During Isothermal Storage	Hohyung	Lee
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48021	Polymer-based High Throughput Immunoassay Chip Using Porous Monoliths and Gold Nanoparticles	Cheng-Po	Wang
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48086	Shrinkage of Post-Cure Die Attach Adhesives During Isothermal Storage	Seungbae	Park
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48021	Polymer-based High Throughput Immunoassay Chip Using Porous Monoliths and Gold Nanoparticles	Vuduy	Tung
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48086	Shrinkage of Post-Cure Die Attach Adhesives During Isothermal Storage	Xiaojie	Xue
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48021	Polymer-based High Throughput Immunoassay Chip Using Porous Monoliths and Gold Nanoparticles	Chien-Fu	Chen
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48765	Silica Synthesis and Coating of Quantum Dots in Droplet Based Microreactors	Alican	Ozkan
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48765	Silica Synthesis and Coating of Quantum Dots in Droplet Based Microreactors	Yusuf	Kelestemur
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48229	Defect Density Distributions in Atomic Layer Deposited Films on Polymer Webs	Joe	Spencer
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48765	Silica Synthesis and Coating of Quantum Dots in Droplet Based Microreactors	Hilmi Volkan	Demir
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-3-2	Failure Mechanisms, Reliability & Testing Methods	InterPACKICN-MM2015-48229	Defect Density Distributions in Atomic Layer Deposited Films on Polymer Webs	Markus	Groner
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48765	Silica Synthesis and Coating of Quantum Dots in Droplet Based Microreactors	E. Yegan	Erdem
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48320	Microfluidic calorimeter for absolute dosimetry	Jonghyun	Kim
MEMS and NEMS	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	3-4-2	Biosensors & Systems, Biomedicine, & Microfluidics	InterPACKICN-MM2015-48320	Microfluidic calorimeter for absolute dosimetry	Wonhee	Lee
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48717	Flexible 2D Nanoelectronics	Weinan	Zhu
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48717	Flexible 2D Nanoelectronics	Sherry	Chang
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48789	Design Rules and Prototype Examples for Additive Printing of Flexible Electronics	Tse Nga	Ng
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48789	Design Rules and Prototype Examples for Additive Printing of Flexible Electronics	Ping	Mei
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48789	Design Rules and Prototype Examples for Additive Printing of Flexible Electronics	Steve	Ready

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48789	Design Rules and Prototype Examples for Additive Printing of Flexible Electronics	Gregory	Whiting
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48789	Design Rules and Prototype Examples for Additive Printing of Flexible Electronics	David	Schwartz
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48789	Design Rules and Prototype Examples for Additive Printing of Flexible Electronics	Janos	Veres
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48265	Hierarchical three-dimensional carbon nanostructures for flexible high-energy supercapacitors	yuegang	zhang
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48322	Molding and bonding of thin film parylene for flexible microfluidics	Jihye	Kim
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48585	RFIC Transformer With 12x Size Reduction and 15x Performance Enhancement by Self-Rolled-Up Membrane Nanotechnology	Wen	Huang
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48585	RFIC Transformer With 12x Size Reduction and 15x Performance Enhancement by Self-Rolled-Up Membrane Nanotechnology	Moyang	Li
MEMS and NEMS	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	3-4-3	Wearables, Flexible Systems, & Microrobotics	InterPACKICN-MM2015-48585	RFIC Transformer With 12x Size Reduction and 15x Performance Enhancement by Self-Rolled-Up Membrane Nanotechnology	Xiuling	Li
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48043	A Study on Heat Sink Performance Using V-Shaped Cannelure Structure Fin	Po-Sheng	Huang
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48043	A Study on Heat Sink Performance Using V-Shaped Cannelure Structure Fin	Chi-chuan	Wang
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48511	Small-Scale Vorticity Induced by a Self-Oscillating Fluttering Reed for Heat Transfer Augmentation in Air Cooled Heat Sinks	Pablo	Hidalgo
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48511	Small-Scale Vorticity Induced by a Self-Oscillating Fluttering Reed for Heat Transfer Augmentation in Air Cooled Heat Sinks	Ari	Glezer
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48630	Thermal Behaviors of Passively-Cooled Hybrid Fin Heat Sinks for Lightweight and High Performance Thermal Management	Nico Setiawan	Effendi
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48630	Thermal Behaviors of Passively-Cooled Hybrid Fin Heat Sinks for Lightweight and High Performance Thermal Management	Kyoung Joon	Kim
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48745	Thermal Behavior of Aluminum Alloy Metal Foam Heat Sinks: A Computational and Experimental Approach	Khaled	Al-Athel
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48745	Thermal Behavior of Aluminum Alloy Metal Foam Heat Sinks: A Computational and Experimental Approach	Shahzada P.	Aly
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48745	Thermal Behavior of Aluminum Alloy Metal Foam Heat Sinks: A Computational and Experimental Approach	Abul Fazal M.	Arif
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48745	Thermal Behavior of Aluminum Alloy Metal Foam Heat Sinks: A Computational and Experimental Approach	Javad	Mostaghimi
Thermal Management	Monday, July 06, 2015	03:30 PM - 05:00 PM	4-10-1	Air Cooling - I - Heat Sinks	InterPACKICN-MM2015-48151	A miniature double oscillating-fan cooling system using electromagnetic force.	HsienChin	Su
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48085	A Study on the Thermo-Fluid Simulation Model Using Porous Media in the Power Conversion System	Chang-Woo	Han

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Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48085	A Study on the Thermo-Fluid Simulation Model Using Porous Media in the Power Conversion System	You-Lim	Moon
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48085	A Study on the Thermo-Fluid Simulation Model Using Porous Media in the Power Conversion System	Seung-Boong	Jeong
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48085	A Study on the Thermo-Fluid Simulation Model Using Porous Media in the Power Conversion System	Jong-Hee	Han
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48191	Orientation Effects on Thermal Performance of Radial Heat Sinks Subject to Natural Convection	Bin	Li
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48191	Orientation Effects on Thermal Performance of Radial Heat Sinks Subject to Natural Convection	Chan	Byon
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48641	Temperature Depression Under Heat Sources With Cylindrical Contact Thermocouples	Kayvan	Abbasi
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48641	Temperature Depression Under Heat Sources With Cylindrical Contact Thermocouples	Sukhvinder	Kang
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48753	Unsteady Heat Flux Measurements in Agitated Channel Flows	Smita	Agrawal
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48753	Unsteady Heat Flux Measurements in Agitated Channel Flows	Mark	North
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48753	Unsteady Heat Flux Measurements in Agitated Channel Flows	Terrence	Simon
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48753	Unsteady Heat Flux Measurements in Agitated Channel Flows	Tianhong	Cui
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48671	Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules	Ehsan	Haghighi
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48671	Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules	Thanh	L. Phan
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48671	Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules	Vijit	Wuttijumnong
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48671	Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules	Koichi	Mashiko
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48671	Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules	Yuji	Saito
Thermal Management	Monday, July 06, 2015	05:30 PM - 07:00 PM	4-10-2	Air Cooling - II - Measurements and System Level Solutions	InterPACKICN-MM2015-48671	Improved Air Cooling Heat Pipe Based Thermal Solutions for Heat Sinks in Optical Plug Modules	Masataka	Mochizuki
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48119	Thermally-Optimum Design of GaN-on-SiC HEMT	Caleb	Holloway
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	Tianyi	Gao
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48119	Thermally-Optimum Design of GaN-on-SiC HEMT	Avram	Bar-Cohen
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	James	Geer
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	Russell	Tipton

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Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	Bruce	Murray
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	Bahgat	Sammakia
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	Alfonso	Ortega
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48071	Raised Floor Hybrid Cooled Data Center: Effect on Rack Inlet Air Temperatures when In Row Cooling Units are installed between the Racks	Roger	Schmidt
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48396	Development of a Library of Component Models for Thermodynamic Simulations of Data Centers	Aaron	Wemhoff
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48333	Thermal Diffusion Tomography for Quantitative Non-Destructive Characterization of Electronic Packages	Bahar	Öner
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48396	Development of a Library of Component Models for Thermodynamic Simulations of Data Centers	Khosrow	Ebrahimi
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48333	Thermal Diffusion Tomography for Quantitative Non-Destructive Characterization of Electronic Packages	Hakan	Erturk
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48424	Perforated Tile Airflow Prediction: A Comparison of RANS CFD, Fast Fluid Dynamics, and Potential Flow Modeling	Christopher	Healey
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48802	A Parametric Study of the Impact of Energy Relaxation Time on Thermal Behavior of Power Si MOSFET in Elector-Thermal Analysis	Risako	Kibushi
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48424	Perforated Tile Airflow Prediction: A Comparison of RANS CFD, Fast Fluid Dynamics, and Potential Flow Modeling	Jim	VanGilder
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48802	A Parametric Study of the Impact of Energy Relaxation Time on Thermal Behavior of Power Si MOSFET in Elector-Thermal Analysis	Tomoyuki	Hatakeyama
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48424	Perforated Tile Airflow Prediction: A Comparison of RANS CFD, Fast Fluid Dynamics, and Potential Flow Modeling	Zachary	Pardey
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48802	A Parametric Study of the Impact of Energy Relaxation Time on Thermal Behavior of Power Si MOSFET in Elector-Thermal Analysis	Shinji	Nakagawa
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48802	A Parametric Study of the Impact of Energy Relaxation Time on Thermal Behavior of Power Si MOSFET in Elector-Thermal Analysis	Masaru	Ishizuka
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48592	Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip	Tanya	Liu
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48592	Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip	Farzad	Houshmand
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48592	Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip	Catherine	Gorle

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Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48592	Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip	Sebastian	Scholl
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-1-6	Data Center Modeling and Experiments	InterPACKICN-MM2015-48448	Creating a Calibrated CFD Model of a Midsize Data Center	David	Plamondon
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48592	Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip	Hooman	Kazemi
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48592	Full Scale Simulation of an Integrated Monolithic Heat Sink for Thermal Management of a High Power Density GaN-SiC Chip	Kenneth	Vanhille
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48537	Performance and Integration Implications of Addressing Localized Hotspots Through Two Approaches: Clustering of Micro Pin-Fins and Dedicated Microgap Coolers	Craig	Green
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48537	Performance and Integration Implications of Addressing Localized Hotspots Through Two Approaches: Clustering of Micro Pin-Fins and Dedicated Microgap Coolers	Peter	Kottke
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48537	Performance and Integration Implications of Addressing Localized Hotspots Through Two Approaches: Clustering of Micro Pin-Fins and Dedicated Microgap Coolers	Thomas	Sarvey
Thermal Management	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	4-4-2	Device-Level	InterPACKICN-MM2015-48537	Performance and Integration Implications of Addressing Localized Hotspots Through Two Approaches: Clustering of Micro Pin-Fins and Dedicated Microgap Coolers	Andrei	Fedorov
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48364	Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling	Joseph	Schaadt
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48017	Design, Fabrication and Characterization of a Mechanical Micropump	Bin	Duan
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48364	Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling	Kamran	Fouladi
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48017	Design, Fabrication and Characterization of a Mechanical Micropump	Tinghui	Guo
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48017	Design, Fabrication and Characterization of a Mechanical Micropump	Minqing	Luo
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48364	Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling	Joseph	Pigeon
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48400	Data Center Optimization Using Performance Metrics	Mark	Seymour
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48400	Data Center Optimization Using Performance Metrics	Magnus	Herrlin
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48770	Liquid Flow Analysis for Porous Media in Large Vapor Chamber With Multiple Heat Sources	Sergio	Escobar
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48770	Liquid Flow Analysis for Porous Media in Large Vapor Chamber With Multiple Heat Sources	Niru	Kumari
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48432	Development of a Raised-Floor Plenum Design Tool	Xuanhang (Simon)	Zhang
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48770	Liquid Flow Analysis for Porous Media in Large Vapor Chamber With Multiple Heat Sources	Rocky	Shih
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48770	Liquid Flow Analysis for Porous Media in Large Vapor Chamber With Multiple Heat Sources	Sarah	Anthony

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48770	Liquid Flow Analysis for Porous Media in Large Vapor Chamber With Multiple Heat Sources	Cullen	Bash
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48649	Next Generation of Power Electronics Cooling Utilizing an Integrated Heat Sink: Thermosiphon vs. Pump Driven Loop	Fabio	Battaglia
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48234	Experimental and Numerical Characterization of A Raised Floor Data Center Using Rapid Operational Flow Curves Model	Husam	Alissa
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48649	Next Generation of Power Electronics Cooling Utilizing an Integrated Heat Sink: Thermosiphon vs. Pump Driven Loop	Christian D.	Bonk
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48234	Experimental and Numerical Characterization of A Raised Floor Data Center Using Rapid Operational Flow Curves Model	Kourosh	Nemati
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48649	Next Generation of Power Electronics Cooling Utilizing an Integrated Heat Sink: Thermosiphon vs. Pump Driven Loop	Veena V.	Rao
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-1-7	Data Center Design	InterPACKICN-MM2015-48234	Experimental and Numerical Characterization of A Raised Floor Data Center Using Rapid Operational Flow Curves Model	Ken	Schneebeli
Thermal Management	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	4-4-3	Liquid Cooling	InterPACKICN-MM2015-48061	Numerical and Experimental Investigation of Shell-and-Tube Phase Change Material Thermal Storage Unit	Thomas H.	Sherer II
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48019	Hot Spot Elimination by Thin and Smart Heat Spreader	Mohammad Shahed	Ahamed
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48025	Lattice Boltzmann Simulations on the Charging Procedure of a Solar Storage Tank With Immersed Phase Change Materials	Yan	Su
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48344	Design Space Exploration of 3D CPUs and Micro-Fluidic Heatsinks with Thermo-Electrical-Physical Co-Optimization	Caleb	Serafy
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48344	Design Space Exploration of 3D CPUs and Micro-Fluidic Heatsinks with Thermo-Electrical-Physical Co-Optimization	Ankur	Srivastava
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48344	Design Space Exploration of 3D CPUs and Micro-Fluidic Heatsinks with Thermo-Electrical-Physical Co-Optimization	Donald	Yeung
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48082	The Influence of Nanoparticle Type on the Viscosity of Nanoenhanced Energy Storage Materials	Kieran	Hess
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48354	Co-placement for Pin-fin Based Micro-Fluidically Cooled 3D-ICs.	Zhiyuan	Yang
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48285	Experimental Investigation of Fluid Motion in Pulsating Heat Pipe	Hyung Yun	Noh
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48082	The Influence of Nanoparticle Type on the Viscosity of Nanoenhanced Energy Storage Materials	Amy	Fleischer
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48285	Experimental Investigation of Fluid Motion in Pulsating Heat Pipe	Sung Jin	Kim
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48051	Thermal Behavior of Rectangular Flux Channels with Discretely Specified Contact Flux and Temperature	Masood	Razavi
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48369	Enhanced Melting for Transient Thermal Management	Tomer	Rozenfeld
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48386	Electrical-Thermal-Reliability Co-Design for TSV-Based 3D-ICs	Tiantao	Lu

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48051	Thermal Behavior of Rectangular Flux Channels with Discretely Specified Contact Flux and Temperature	Yuri	Muzychka
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48369	Enhanced Melting for Transient Thermal Management	Ron	Hayat
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48051	Thermal Behavior of Rectangular Flux Channels with Discretely Specified Contact Flux and Temperature	Serpil	Kocabiyik
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48369	Enhanced Melting for Transient Thermal Management	Yoram	Kozak
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48369	Enhanced Melting for Transient Thermal Management	Gennady	Ziskind
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48499	Passive Thermal Management Using-phase Change Materials: Experimental Evaluation of Thermal Resistances	Yash	Ganatra
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48533	Multi-Physics Driven Co-Design of 3D Multicore Architectures	He	XIAO
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48533	Multi-Physics Driven Co-Design of 3D Multicore Architectures	Wen	Yueh
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48533	Multi-Physics Driven Co-Design of 3D Multicore Architectures	Saibal	Mukhopadhyay
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48533	Multi-Physics Driven Co-Design of 3D Multicore Architectures	Sudhakar	Yalamanchili
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Arvind	Sridhar
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-8-4	Phase Change Materials	InterPACKICN-MM2015-48522	Quantification of Phase Change Material Energy Storage Capability Using Multiphysics Simulations	William E.	O`Connor
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-4-4	Heat Spreading	InterPACKICN-MM2015-48685	Numerical Investigation of Thermal Resistance in a Rectangular Flux Channel With Non-Uniform Heat Convection in the Sink Plane	Alireza	Dehghani-Sanij
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Chin Lee	Ong
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Stefan	Paredes
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Thomas	Brunschwiler
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Bruno	Michel
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Pritish	Parida
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Evan	Colgan
Thermal Management	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	4-11-1	Power-Performance-Reliability Co-design for ICs	InterPACKICN-MM2015-48690	Thermal Design of a Hierarchical Radially Expanding Cavity for Two-Phase Cooling of Integrated Circuits	Timothy	Chainer
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48042	Design Guideline to Improve Thermal Management of 3D Package Using Cu-to-Cu Direct Bonding	Ah-Young	Park
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48072	High-accuracy characterization of thermoelectric cooler performance	Beomjin	Kwon
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48072	High-accuracy characterization of thermoelectric cooler performance	Seung-Hyub	Baek
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48072	High-accuracy characterization of thermoelectric cooler performance	Seong Keun	Kim

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Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48072	High-accuracy characterization of thermoelectric cooler performance	Jin-Sang	Kim
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48104	Compact Thermal Modeling Methodology for Active and Thermal Bumps in 3D Microelectronic Packages	Arnab	Choudhury
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48421	Harvesting CPU Waste Heat through Pyroelectric Materials	Soochan	Lee
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48104	Compact Thermal Modeling Methodology for Active and Thermal Bumps in 3D Microelectronic Packages	Shrenik	Kothari
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48421	Harvesting CPU Waste Heat through Pyroelectric Materials	Patrick E.	Phelan
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48104	Compact Thermal Modeling Methodology for Active and Thermal Bumps in 3D Microelectronic Packages	Nayandeep	Mahanta
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48421	Harvesting CPU Waste Heat through Pyroelectric Materials	Carole-jean	Wu
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48104	Compact Thermal Modeling Methodology for Active and Thermal Bumps in 3D Microelectronic Packages	Hemanth	Dhavaleswarapu
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48421	Harvesting CPU Waste Heat through Pyroelectric Materials	Nishant	Singh
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48104	Compact Thermal Modeling Methodology for Active and Thermal Bumps in 3D Microelectronic Packages	Je Young	Chang
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48618	Printable thermoelectric materials	Kunihisa	Kato
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48618	Printable thermoelectric materials	Takuya	Hashiguchi
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48618	Printable thermoelectric materials	Hisashi	Iwata
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48618	Printable thermoelectric materials	Kosuke	Kosaka
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48316	Experimental Characterization of the Vertical and Lateral Heat Transfer in 3D-SIC Packages	Herman	Oprins
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48316	Experimental Characterization of the Vertical and Lateral Heat Transfer in 3D-SIC Packages	Vladimir	Cherman
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48692	Enhancement and Optimization of Planar Impingement Heat Transfer for Thermoelectric Power Generation	Stephen	Heister
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-6-1	Thermoelectrics	InterPACKICN-MM2015-48692	Enhancement and Optimization of Planar Impingement Heat Transfer for Thermoelectric Power Generation	Timothy	Fisher
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48353	Benchmarking Study on the Thermal Management Landscape for 3D ICs: from Back-Side, to Volumetric Heat Removal	Gerd	Schlottig
Thermal Management	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	4-5-1	Thermal Management of Stacked Die and Packages	InterPACKICN-MM2015-48422	Modeling Thermal Spreading Resistance in via Arrays	Michael	Fish
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48024	An Investigation Into Performance Characteristics of an Axial Flow Fan Using CFD for Electronic Devices	hafiz muhammad	hashim
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48024	An Investigation Into Performance Characteristics of an Axial Flow Fan Using CFD for Electronic Devices	Murat	parlak
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48024	An Investigation Into Performance Characteristics of an Axial Flow Fan Using CFD for Electronic Devices	Baris	Dogruoz
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48056	Thermal Management/Roadmap and Energy Efficiency ofTelecommunication Equipment	Lian-Tuu	Yeh

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48250	Thermal Management in Rack Scale Computing System With Shared Power and Shared Cooling	Chuan	Song
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48250	Thermal Management in Rack Scale Computing System With Shared Power and Shared Cooling	Haifeng	Gong
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48250	Thermal Management in Rack Scale Computing System With Shared Power and Shared Cooling	Chun	Wang
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48250	Thermal Management in Rack Scale Computing System With Shared Power and Shared Cooling	Nishi	Ahuja
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48250	Thermal Management in Rack Scale Computing System With Shared Power and Shared Cooling	Xiang	Zhou
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48250	Thermal Management in Rack Scale Computing System With Shared Power and Shared Cooling	Gabriel C	Cox
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48600	Flow Resistance Network Analysis in Fan-Cooled High-Density Packaging Electronic Equipment	Takashi	Fukue
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48600	Flow Resistance Network Analysis in Fan-Cooled High-Density Packaging Electronic Equipment	Koichi	Hirose
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48600	Flow Resistance Network Analysis in Fan-Cooled High-Density Packaging Electronic Equipment	Kazuma	Obata
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48600	Flow Resistance Network Analysis in Fan-Cooled High-Density Packaging Electronic Equipment	Katsuhiro	Koizumi
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48258	Rack Server Solution in Data Center	Sheng	Kang
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48258	Rack Server Solution in Data Center	Guofeng	Chen
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48258	Rack Server Solution in Data Center	ruiquan	Ding
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48258	Rack Server Solution in Data Center	jiajun	Zhang
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48258	Rack Server Solution in Data Center	Pinyan	Zhu
Thermal Management	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	4-2-1	Air Cooling Approaches and Components	InterPACKICN-MM2015-48258	Rack Server Solution in Data Center	Chao	Liu
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48607	Enhancement of Water Cooling Performance in Narrow Flow Passages by Using Micro Heat Sinks With Miniature Vortex Generators	Mamoru	Kikuchi
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48607	Enhancement of Water Cooling Performance in Narrow Flow Passages by Using Micro Heat Sinks With Miniature Vortex Generators	Yasuhiko	Ueda
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48607	Enhancement of Water Cooling Performance in Narrow Flow Passages by Using Micro Heat Sinks With Miniature Vortex Generators	Shigekado	Kusabuka
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48607	Enhancement of Water Cooling Performance in Narrow Flow Passages by Using Micro Heat Sinks With Miniature Vortex Generators	Tomoyasu	Miyahara
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48640	EVALUATION OF COOLING TECHNOLOGIES FOR HIGH PERFORMANCE COMPUTING SYSTEMS	Suchismita	Sarangi
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48640	EVALUATION OF COOLING TECHNOLOGIES FOR HIGH PERFORMANCE COMPUTING SYSTEMS	Will	Kuhn

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48640	EVALUATION OF COOLING TECHNOLOGIES FOR HIGH PERFORMANCE COMPUTING SYSTEMS	Scott	Rider
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48640	EVALUATION OF COOLING TECHNOLOGIES FOR HIGH PERFORMANCE COMPUTING SYSTEMS	Claude	Wright
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48640	EVALUATION OF COOLING TECHNOLOGIES FOR HIGH PERFORMANCE COMPUTING SYSTEMS	Shankar	Krishnan
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48771	Effect of Flow Guide Integration on the Thermal Performance of High Performance Liquid Cooled Immersion Server Modules	Joshua	Gess
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48771	Effect of Flow Guide Integration on the Thermal Performance of High Performance Liquid Cooled Immersion Server Modules	Tyler	Dreher
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48771	Effect of Flow Guide Integration on the Thermal Performance of High Performance Liquid Cooled Immersion Server Modules	Sushil	Bhavnani
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48771	Effect of Flow Guide Integration on the Thermal Performance of High Performance Liquid Cooled Immersion Server Modules	Wayne	Johnson
Thermal Management	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	4-2-2	Hybrid & Liquid Cooling Approaches and Components	InterPACKICN-MM2015-48377	Numerical and Experimental Characterization of the Transient Effectiveness of a Water to Air Heat Exchanger for Data Center Cooling Systems	Marcelo	Del Valle
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48015	Key technologies to implement high thermal ambient data center	Shu	Zhang
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48568	Experimental Validation of a Detailed Phase Change Model on a Hardware Testbed	Charlie	De Vivero
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48015	Key technologies to implement high thermal ambient data center	yu	Han
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48568	Experimental Validation of a Detailed Phase Change Model on a Hardware Testbed	Fulya	Kaplan
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48568	Experimental Validation of a Detailed Phase Change Model on a Hardware Testbed	Ayse	Coskun
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48015	Key technologies to implement high thermal ambient data center	Xiaohong	Liu
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48015	Key technologies to implement high thermal ambient data center	huahua	Ren
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48015	Key technologies to implement high thermal ambient data center	Guangliang	Guo
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48425	Data Center Cooling Efficiency with Simulation-Based Optimization	Laurent	Billet
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48599	Thermal Conductivity Prediction In Bulk Nanostructured Materials from Single Interface Molecular Dynamics Simulations	Chang Jin	Choi
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48599	Thermal Conductivity Prediction In Bulk Nanostructured Materials from Single Interface Molecular Dynamics Simulations	Nick	Roberts
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48740	A Numerical Study on the Thermal Conductivity of Hybrid-Filler-Nanoparticle Composite Materials	Ich-Long	Ngo
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48593	Discrete Control of Air Conditioning Units in Mission Critical Facilities	Sergio	Bermudez
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48593	Discrete Control of Air Conditioning Units in Mission Critical Facilities	Hendrik	Hamann

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Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48593	Discrete Control of Air Conditioning Units in Mission Critical Facilities	Levente	Klein
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48593	Discrete Control of Air Conditioning Units in Mission Critical Facilities	Fernando	Marianno
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48593	Discrete Control of Air Conditioning Units in Mission Critical Facilities	Alan	Claassen
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48586	Optimal Design of High-Heat-Flux Capillary Evaporator	Kapot	Tarafder
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48684	Neural Network Modelling in Model-Based Control of a Data Center	Nachiket	Kansara
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-9-1	Multiphysics and Multiscale Modeling for Thermal Management of Electronics	InterPACKICN-MM2015-48586	Optimal Design of High-Heat-Flux Capillary Evaporator	Gisuk	Hwang
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48684	Neural Network Modelling in Model-Based Control of a Data Center	Rohit	Katti
Thermal Management	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	4-1-1	Data Center Control and Optimization	InterPACKICN-MM2015-48684	Neural Network Modelling in Model-Based Control of a Data Center	Alan	Bowling
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48205	Microprocessor Silicon Die Temperature Prediction by Simplified Boundary Conditions	Koji	Nishi
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48277	CFD Analysis of an Air Cooled Planar Heat Sink with Cross-Connected Alternating Converging-Diverging Channels	Omer Bugra	KANARGI
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48277	CFD Analysis of an Air Cooled Planar Heat Sink with Cross-Connected Alternating Converging-Diverging Channels	Poh-seng	Lee
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48277	CFD Analysis of an Air Cooled Planar Heat Sink with Cross-Connected Alternating Converging-Diverging Channels	Christopher	YAP
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-1-2	Data Center Transient Modeling and Measurements	InterPACKICN-MM2015-48237	Steady State and Transient Comparison of Perimeter and Row-Based Cooling Employing Controlled Cooling Curves	Dave	King
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48606	Thermal Modeling of Remote Radio Head Units	Manasa	Sahini
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48606	Thermal Modeling of Remote Radio Head Units	Betsegaw	Gebrehiwot
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48606	Thermal Modeling of Remote Radio Head Units	Rocky	Colapietro
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48678	A Composite Cu/HOPG Heat Spreader for Immersion Cooling of High Power Chips	Arthur	Suszko
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48678	A Composite Cu/HOPG Heat Spreader for Immersion Cooling of High Power Chips	Mohamed	El-Genk
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-1-2	Data Center Transient Modeling and Measurements	InterPACKICN-MM2015-48423	The Effectiveness of Data Center Overhead Cooling in Steady and Transient Scenarios: Comparison of Downward Flow to a Cold Aisle versus Upward Flow from a Hot Aisle	Luis	Silva-Llanca
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48362	Challenges and Opportunities in Thermal Management of Multi-Chip Packages	Chandra Mohan (CM)	Jha
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48362	Challenges and Opportunities in Thermal Management of Multi-Chip Packages	Susan	Smith
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48362	Challenges and Opportunities in Thermal Management of Multi-Chip Packages	Sanjoy	Saha
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-9-2	Thermal Modeling and Optimization Techniques	InterPACKICN-MM2015-48362	Challenges and Opportunities in Thermal Management of Multi-Chip Packages	Baris	Bicen

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Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-1-2	Data Center Transient Modeling and Measurements	InterPACKICN-MM2015-48430	Parameter Estimation for Lumped Capacitance Modeling of CRAH Units during Chilled Water Interruption	Hamza Salih	Erden
Thermal Management	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	4-1-2	Data Center Transient Modeling and Measurements	InterPACKICN-MM2015-48430	Parameter Estimation for Lumped Capacitance Modeling of CRAH Units during Chilled Water Interruption	H. Ezzat	Khalifa
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48152	Understanding the True Total Cost of Ownership of Water Cooling for Data Centers	Dustin	Demetriou
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48152	Understanding the True Total Cost of Ownership of Water Cooling for Data Centers	Howard	Mahaney
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48152	Understanding the True Total Cost of Ownership of Water Cooling for Data Centers	Vinod	Kamath
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48439	Thermodynamic Analysis of Full Liquid-Cooled Data Centers	Anish	Bhalerao
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48466	Thermodynamic Characterization of a Server Optimized for High Performance Computing Using Water Cooling	Mark	Steinke
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48466	Thermodynamic Characterization of a Server Optimized for High Performance Computing Using Water Cooling	Lynn	Parnell
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48470	Thermodynamic Characterization of a Direct Water Cooled Server Rack Running Synthetic and Real High Performance Computing Work Loads	Garrison	Vaughan
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48470	Thermodynamic Characterization of a Direct Water Cooled Server Rack Running Synthetic and Real High Performance Computing Work Loads	John	Thompson
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48470	Thermodynamic Characterization of a Direct Water Cooled Server Rack Running Synthetic and Real High Performance Computing Work Loads	Daniel	Duffy
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48470	Thermodynamic Characterization of a Direct Water Cooled Server Rack Running Synthetic and Real High Performance Computing Work Loads	Louis	Capps
Thermal Management	Thursday, July 09, 2015	07:45 AM - 09:15 AM	4-1-3	Data Center Liquid Cooling Implementation and Performance	InterPACKICN-MM2015-48476	A Computational Study to Compare the Data Center Cooling Energy Spent Using Traditional Air Cooled and Hybrid Water Cooled Servers	Aparna	Vallury
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48543	Effective Thermal Management with Different Thermal Interface Materials for Different Applications	Fred	Lo
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48543	Effective Thermal Management with Different Thermal Interface Materials for Different Applications	Kevin	Chung
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48302	On Simple Prediction Method for Thermal Contact Resistance between Wavy Surfaces with Thermal Interface Material under Low Mean Nominal Contact Pressure (Fundamental Study Based on 1-D Model)	Toshio	Tomimura
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48302	On Simple Prediction Method for Thermal Contact Resistance between Wavy Surfaces with Thermal Interface Material under Low Mean Nominal Contact Pressure (Fundamental Study Based on 1-D Model)	Yasushi	Koito
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48302	On Simple Prediction Method for Thermal Contact Resistance between Wavy Surfaces with Thermal Interface Material under Low Mean Nominal Contact Pressure (Fundamental Study Based on 1-D Model)	Taewan	Do

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Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48634	Mechanical Solution for Dealing with Phase Change Material Flow When Mounting Electrical Components	Paul J.	Grosskreuz, P.E.
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48634	Mechanical Solution for Dealing with Phase Change Material Flow When Mounting Electrical Components	Rui	Zhou
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48634	Mechanical Solution for Dealing with Phase Change Material Flow When Mounting Electrical Components	Kelly J.	Bronk
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48303	The Detection of Minimum BLT Condition With Electrical Capacitance Measurement	Yasuhiro	Saito
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48303	The Detection of Minimum BLT Condition With Electrical Capacitance Measurement	Satoru	Suzuki
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48303	The Detection of Minimum BLT Condition With Electrical Capacitance Measurement	Takanori	Komuro
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48146	Measuring and Optimizing Thermal Interface Material Performance for VR Heatsink Designs	Jun	Lu
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48146	Measuring and Optimizing Thermal Interface Material Performance for VR Heatsink Designs	Michelle C.	Lin
Thermal Management	Thursday, July 09, 2015	09:30 AM - 11:00 AM	4-3-1	Thermal Interface Materials - I	InterPACKICN-MM2015-48146	Measuring and Optimizing Thermal Interface Material Performance for VR Heatsink Designs	Bernie	Short
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-1-4	Data Center Economizers and Waste Heat Recovery	InterPACKICN-MM2015-48169	Consideration for Running Data Center at High Temperatures and Using Free Air Cooling	Yongzhan	He
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48535	Mechanical Characterization of Metal Foams for Contact Resistance in Thermal Interface Applications	Ninad	Trifate
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48535	Mechanical Characterization of Metal Foams for Contact Resistance in Thermal Interface Applications	Eric	Nauman
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-1-4	Data Center Economizers and Waste Heat Recovery	InterPACKICN-MM2015-48169	Consideration for Running Data Center at High Temperatures and Using Free Air Cooling	Tianyu	Zhou
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-1-4	Data Center Economizers and Waste Heat Recovery	InterPACKICN-MM2015-48169	Consideration for Running Data Center at High Temperatures and Using Free Air Cooling	Tao	Liu
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48758	Onsite synthesis of thermally percolated nanocomposite for thermal interface material	Masanao	Oobori
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48758	Onsite synthesis of thermally percolated nanocomposite for thermal interface material	Satoshi	Nita
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48758	Onsite synthesis of thermally percolated nanocomposite for thermal interface material	Asuka	Miura
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48758	Onsite synthesis of thermally percolated nanocomposite for thermal interface material	Junichiro	Shiomi
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48083	Durability of Low Melt Alloys as Thermal Interface Materials	Chandan	Roy
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-1-4	Data Center Economizers and Waste Heat Recovery	InterPACKICN-MM2015-48274	Theoretical and Empirical Energy Impacts of Economization in Data Centers	Dan	Comperchio
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-1-4	Data Center Economizers and Waste Heat Recovery	InterPACKICN-MM2015-48274	Theoretical and Empirical Energy Impacts of Economization in Data Centers	Sameer	Behere
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48083	Durability of Low Melt Alloys as Thermal Interface Materials	Michael	Hamilton
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48083	Durability of Low Melt Alloys as Thermal Interface Materials	Roy	Knight

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Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48083	Durability of Low Melt Alloys as Thermal Interface Materials	Daniel	Harris
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48732	The Efficiency of Heat Transfer Through the Interface of Sintered Silver Nanoparticles	Krzysztof	Stojek
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48732	The Efficiency of Heat Transfer Through the Interface of Sintered Silver Nanoparticles	Jan	Felba
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48732	The Efficiency of Heat Transfer Through the Interface of Sintered Silver Nanoparticles	Bartosz	Platek
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48735	Morphological Impact on Thermal Interface Resistance of Self Catalyzing Fecralloy MWNT TIMs	Timothy	Longson
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48735	Morphological Impact on Thermal Interface Resistance of Self Catalyzing Fecralloy MWNT TIMs	James	Maddocks
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-3-2	Thermal Interface Materials - II	InterPACKICN-MM2015-48735	Morphological Impact on Thermal Interface Resistance of Self Catalyzing Fecralloy MWNT TIMs	Ali	Kashani
Thermal Management	Thursday, July 09, 2015	01:00 PM - 02:30 PM	4-1-4	Data Center Economizers and Waste Heat Recovery	InterPACKICN-MM2015-48395	Integration of Waste Heat Recovery Modules to the Chip to Cooling Tower Thermodynamic System Simulator VIAS	Gerard	Jones
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48438	Start Up and Transient Behavior of an Oscillating Heat Pipe	Sagar B.	Paudel
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48438	Start Up and Transient Behavior of an Oscillating Heat Pipe	Gregory	Michna
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48440	Geometric Evaporator Enhancements of an Oscillating Heat Pipe	Mitchell P.	Hoesing
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48665	Heat transfer characteristics of self-rewetting fluid and its application in heat pipe	Shuangfeng	Wang
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48665	Heat transfer characteristics of self-rewetting fluid and its application in heat pipe	Yanxin	Hu
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48665	Heat transfer characteristics of self-rewetting fluid and its application in heat pipe	You	Zhou
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48665	Heat transfer characteristics of self-rewetting fluid and its application in heat pipe	Winston	Zhang
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48268	Fluid Flow And Heat Transfer In Polygonal Micro Heat Pipes	Sai Sashankh	Rao
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48268	Fluid Flow And Heat Transfer In Polygonal Micro Heat Pipes	Harris	Wong
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48546	Evaporation and liquid-vapor interface dynamics in an ultra-thin MEMS loop heat pipe	Navdeep Singh	Dhillon
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48546	Evaporation and liquid-vapor interface dynamics in an ultra-thin MEMS loop heat pipe	Kripa K.	Varanasi
Thermal Management Using Micro Channels, Jets, Sprays	Monday, July 06, 2015	05:30 PM - 07:00 PM	5-6-1	Advanced and oscillating heat pipes	InterPACKICN-MM2015-48546	Evaporation and liquid-vapor interface dynamics in an ultra-thin MEMS loop heat pipe	Albert P.	Pisano
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Sohail R.	Reddy
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Abas	Abdoli

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	George S.	Dulikravich
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Cesar	Pacheco
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Genesis	Vasquez
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Rajesh	Jha
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Marcelo	Colaco
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48242	Multi-Objective Optimization of Micro-Pin Fin Arrays for Cooling of High Heat Flux Electronics With a Hot Spot	Helcio	Orlande
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48496	Embedded Two-Phase Cooling of High Flux Electronics via Micro-Enabled Surfaces and Fluid Delivery Systems (FEEDS)	Raphael	Mandel
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48632	Microscale Layering of Liquid and Vapor Phases within Microstructures for Self-regulated Flow Delivery to Local Hot Spots	Abdy	Fazeli
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48632	Microscale Layering of Liquid and Vapor Phases within Microstructures for Self-regulated Flow Delivery to Local Hot Spots	Sajjad	Bigham
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48632	Microscale Layering of Liquid and Vapor Phases within Microstructures for Self-regulated Flow Delivery to Local Hot Spots	Mehdi	Mortazavi
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48632	Microscale Layering of Liquid and Vapor Phases within Microstructures for Self-regulated Flow Delivery to Local Hot Spots	Saeed	Moghaddam
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48689	Embedded Cooling of High Heat Flux Electronics Utilizing Distributed Micro-fluidic Impingement Jets	John	Ditri
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48689	Embedded Cooling of High Heat Flux Electronics Utilizing Distributed Micro-fluidic Impingement Jets	Joseph	Hahn
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48689	Embedded Cooling of High Heat Flux Electronics Utilizing Distributed Micro-fluidic Impingement Jets	Roland	Cadotte
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48689	Embedded Cooling of High Heat Flux Electronics Utilizing Distributed Micro-fluidic Impingement Jets	Michael	McNulty
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48689	Embedded Cooling of High Heat Flux Electronics Utilizing Distributed Micro-fluidic Impingement Jets	Denise	Luppa
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48757	Reliable Integration of Microchannel Coolers for Power Electronics	David	Squiller
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	5-7-1	High heat flux hot spot cooling	InterPACKICN-MM2015-48757	Reliable Integration of Microchannel Coolers for Power Electronics	Sumeer	Khanna
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48103	A Study on Flow Boiling in Microchannel with Piranha Pin Fin	Xiangfei	Yu
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48103	A Study on Flow Boiling in Microchannel with Piranha Pin Fin	Corey	Woodcock

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48103	A Study on Flow Boiling in Microchannel with Piranha Pin Fin	Yingying	Wang
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48103	A Study on Flow Boiling in Microchannel with Piranha Pin Fin	Joel	Plawsky
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48103	A Study on Flow Boiling in Microchannel with Piranha Pin Fin	Yoav	Peles
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	Fanghao	Yang
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	Mark	Schultz
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	Robert	Polastre
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	Bing	Dang
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	Cornelia	Tsang
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	Michael	Gaynes
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48341	Local Measurements of Flow Boiling Heat Transfer on Hot Spots in 3D Compatible Radial Microchannels	John	Knickerbocker
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48584	3D IC With Embedded Microfluidic Cooling: Technology, Thermal Performance, and Electrical Implications	Xuchen	Zhang
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48584	3D IC With Embedded Microfluidic Cooling: Technology, Thermal Performance, and Electrical Implications	Xuefei	Han
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48584	3D IC With Embedded Microfluidic Cooling: Technology, Thermal Performance, and Electrical Implications	Craig E.	Green
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Louis-Michel	Collin
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Vincent	Fiori
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Perceval	Coudrain
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Sandrine	Lhostis
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Séverine	Chéramy
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Jean-Philippe	Colonna
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Benoît	Mathieu

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Abdelkader	Souifi
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	5-8-1	Embedded cooling for 3D ICs	InterPACKICN-MM2015-48830	Modeling conjugate heat transfer in 3D microelectronics with embedded microchannels using a hybrid analytical and finite element method	Luc	Frechette
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	5-9-1	Two Phase Boiling Computational Modeling Challenges 1	InterPACKICN-MM2015-48033	Use of Two-Phase CFD Simulations to Develop a Boiling Heat Transfer Prediction Method for Slug Flow Within Microchannels	Mirco	Magnini
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	5-9-1	Two Phase Boiling Computational Modeling Challenges 1	InterPACKICN-MM2015-48066	Novel Dynamic Numerical Microchannel Evaporator Model To Investigate Parallel Channel Instabilities	Tom	Saenen
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	5-9-1	Two Phase Boiling Computational Modeling Challenges 1	InterPACKICN-MM2015-48098	CFD Analysis of Flow Boiling in a Silicon Microchannel With Non-Uniform Heat Flux	Daniel	Lorenzini
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	5-9-1	Two Phase Boiling Computational Modeling Challenges 1	InterPACKICN-MM2015-48178	A Cost-Effective Modeling Approach for Simulating Phase Change and Flow Boiling in Microchannels	Zhenhai	Pan
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48300	Transient Evolution of Heat Transfer Performance During Flow Boiling in a Microchannel	Mrinal	Jagirdar
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48288	Passive Thermosyphon Cooling System for High Heat Flux Servers	Sylwia	Szczukiewicz
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48288	Passive Thermosyphon Cooling System for High Heat Flux Servers	Nicolas	Lamaison
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48288	Passive Thermosyphon Cooling System for High Heat Flux Servers	Jackson	Marcinichen
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48288	Passive Thermosyphon Cooling System for High Heat Flux Servers	Peter	Beucher
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48486	Enhanced Flow Boiling of Ethanol in Open Microchannels With Tapered Manifolds in a Gravity-Driven Flow	Philipp	Buchling
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	5-2-1	Flow-boiling experimental investigations	InterPACKICN-MM2015-48486	Enhanced Flow Boiling of Ethanol in Open Microchannels With Tapered Manifolds in a Gravity-Driven Flow	Satish	Kandlikar
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48334	Modeling and Simulation Challenges in Embedded Two Phase Cooling:DARPA?s ICECool Program	Kaiser	Matin
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48334	Modeling and Simulation Challenges in Embedded Two Phase Cooling:DARPA?s ICECool Program	Avram	Bar-Coen
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48334	Modeling and Simulation Challenges in Embedded Two Phase Cooling:DARPA?s ICECool Program	Joseph	Maurer
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48441	ALE-FEM for Two-Phase Flows With Heat and Mass Transfer in Microchannels	Gustavo	Anjos
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48441	ALE-FEM for Two-Phase Flows With Heat and Mass Transfer in Microchannels	Norberto	Mangiavacchi
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48441	ALE-FEM for Two-Phase Flows With Heat and Mass Transfer in Microchannels	Jose	Pontes
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48489	Eulerian Multiphase Conjugate Model for Chip-Embedded Micro-Channel Flow Boiling	Hsin-Hua	Tsuei
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48645	Numerical Study of Bubble Instability during Microchannel Flow Boiling	Matthew	Blomquist
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48645	Numerical Study of Bubble Instability during Microchannel Flow Boiling	Arman	Khalighi
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48645	Numerical Study of Bubble Instability during Microchannel Flow Boiling	Abhijit	Mukherjee

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management Using Micro Channels, Jets, Sprays	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	5-9-2	Two Phase Boiling Computational Modeling Challenges 2	InterPACKICN-MM2015-48350	A Numerical Study of Pulsating Heat Pipe Performance	Brian	D'entremont
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48123	Optimization of a microchannel geometry for cooling high heat flux microelectronics using numerical simulations	Tom	Verstraete
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48214	Thermal Transport Analysis in Metal Foam Heat Sink With LTE and LTNE Models	Liang	GONG
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48214	Thermal Transport Analysis in Metal Foam Heat Sink With LTE and LTNE Models	Yongtong	Li
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48214	Thermal Transport Analysis in Metal Foam Heat Sink With LTE and LTNE Models	minghai	Xu
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48515	Development and Analysis of Micro-Channel Heat Exchangers for Natural Gas Cooling	shyam	menon
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48515	Development and Analysis of Micro-Channel Heat Exchangers for Natural Gas Cooling	Himakar	Ganti
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48515	Development and Analysis of Micro-Channel Heat Exchangers for Natural Gas Cooling	Hailei	Wang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48515	Development and Analysis of Micro-Channel Heat Exchangers for Natural Gas Cooling	Chris	Hagen
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48404	Thermal Performance and Pressure Drop of Galinstan-Based Microchannel Heat-Sink for High Heat-Flux Thermal Management	Yoshikazu	Hayashi
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48404	Thermal Performance and Pressure Drop of Galinstan-Based Microchannel Heat-Sink for High Heat-Flux Thermal Management	Navid	Saneie
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48404	Thermal Performance and Pressure Drop of Galinstan-Based Microchannel Heat-Sink for High Heat-Flux Thermal Management	Yoon Jo	Kim
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	5-1-1	Single phase cooling fundamentals	InterPACKICN-MM2015-48404	Thermal Performance and Pressure Drop of Galinstan-Based Microchannel Heat-Sink for High Heat-Flux Thermal Management	Jong-Hoon	Kim
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48373	Thermal Convection and Stress Analysis of the Cooling System for a Terahertz Radiation Detector	Angela	Wu
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48373	Thermal Convection and Stress Analysis of the Cooling System for a Terahertz Radiation Detector	Arturo	Pacheco-Vega
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48373	Thermal Convection and Stress Analysis of the Cooling System for a Terahertz Radiation Detector	Jeanette	Cobian
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48324	Theoretical (Ideal) Module Cooling and Module Cooling Effectiveness	Michael J.	Ellsworth, Jr.
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48324	Theoretical (Ideal) Module Cooling and Module Cooling Effectiveness	Levi A.	Campbell
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48427	Lid-integral cold plate topology - integration, performance and reliability.	Marco	De Fazio
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48427	Lid-integral cold plate topology - integration, performance and reliability.	Werner	Escher
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48427	Lid-integral cold plate topology - integration, performance and reliability.	Paola	Granatieri

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Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	5-3-1	Cold plate integration	InterPACKICN-MM2015-48427	Lid-integral cold plate topology - integration, performance and reliability.	Vijayeshwar D.	Khanna
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48094	A Computational Study on the Momentum and Heat Transfer Distribution of a Low Frequency Round Impinging Synthetic Jet	Muhammad	Ikhlaq
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48094	A Computational Study on the Momentum and Heat Transfer Distribution of a Low Frequency Round Impinging Synthetic Jet	Omidreza	Ghaffari
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48393	Local Thermal Measurements of Impinging Liquid Jets with an Angled Confining Wall for Power Electronics Cooling	John F.	Maddox
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48393	Local Thermal Measurements of Impinging Liquid Jets with an Angled Confining Wall for Power Electronics Cooling	Roy W.	Knight
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48393	Local Thermal Measurements of Impinging Liquid Jets with an Angled Confining Wall for Power Electronics Cooling	Sushil H.	Bhavnani
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48588	Impingement Cooling in a Simulated Data Center Servers With an Array of Elliptic Air Jets	Sheng Kai	Chang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48588	Impingement Cooling in a Simulated Data Center Servers With an Array of Elliptic Air Jets	Lo Yuan	Hsiang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48588	Impingement Cooling in a Simulated Data Center Servers With an Array of Elliptic Air Jets	Yao-Hsien	Liu
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48823	Response Surface Optimization of Critical Structure Parameters of a Micropump Based on Synthetic Jet	Xiuhua	He
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48823	Response Surface Optimization of Critical Structure Parameters of a Micropump Based on Synthetic Jet	Xitong	Zhang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48823	Response Surface Optimization of Critical Structure Parameters of a Micropump Based on Synthetic Jet	Feng	Huang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48823	Response Surface Optimization of Critical Structure Parameters of a Micropump Based on Synthetic Jet	Jiawei	Zhu
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48161	Evaluation of Cooling Performance of Impinging Jet Array with Extraction Hole in a Novel Cooling Structure	Sun-Min	Kim
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	5-4-1	Liquid and synthetic jets	InterPACKICN-MM2015-48161	Evaluation of Cooling Performance of Impinging Jet Array with Extraction Hole in a Novel Cooling Structure	Kwang-Yong	Kim
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48196	Condensation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	Xiao-peng	Zhou
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48196	Condensation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	David	Kukulka
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48196	Condensation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	Jing	Li
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48196	Condensation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	Jian-jun	Sun

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48196	Condensation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	Wei	Li
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48198	A General Correlation for Condensation Heat Transfer in Micro-Fin for Herringbone and Dimple-Texture Tubes	Si-pu	Guo
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48198	A General Correlation for Condensation Heat Transfer in Micro-Fin for Herringbone and Dimple-Texture Tubes	Jin-liang	Xu
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48308	A Capillary-Wick Heat Pipe Fabricated on a Plastic Board (Fundamental Experiments on Heat Transport Characteristics	Hiroyuki	Maehara
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48308	A Capillary-Wick Heat Pipe Fabricated on a Plastic Board (Fundamental Experiments on Heat Transport Characteristics	Daisuke	Shimada
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48554	Fabrication of a Vapor Chamber on a Plastic Board	Fumihiko	Hideyama
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48554	Fabrication of a Vapor Chamber on a Plastic Board	Shuto	Nonoshita
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48363	Design,Fabrication and Characterizations for Ultra-Thin Thermal Ground Planes	Shanshan	Xu
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	5-5-1	Vapor chambers & condensation	InterPACKICN-MM2015-48363	Design,Fabrication and Characterizations for Ultra-Thin Thermal Ground Planes	Ronggui	Yang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48828	Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling	Masamichi	Kohno
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48828	Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling	Masayuki	Yamada
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48828	Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling	Biao	Shen
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48828	Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling	Sumitomo	Hidaka
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48828	Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling	Koji	Takahashi
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48828	Effect of Dissolved Air on Heat Transfer and Bubble Dynamics on Mixed Wettability Surfaces in Subcooled Pool Boiling	Yasuyuki	Takata
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48235	Convective flow boiling of PF-5060 a dielectric fluid in micro pin fin heat sinks	Erfan	Rasouli
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48235	Convective flow boiling of PF-5060 a dielectric fluid in micro pin fin heat sinks	Vinod	Narayanan
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48170	High Heat Flux Flow Boiling using Liquid-Artery Capillary Wick	Brandon	Shannon
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48559	Evaporation Device with Nanoporous Membrane for High Heat Flux	Daniel	Hanks
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48559	Evaporation Device with Nanoporous Membrane for High Heat Flux	Jay	Sircar
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48559	Evaporation Device with Nanoporous Membrane for High Heat Flux	Zhengmao	Lu

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48559	Evaporation Device with Nanoporous Membrane for High Heat Flux	Dion	Antao
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48559	Evaporation Device with Nanoporous Membrane for High Heat Flux	Shankar	Narayanan
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48559	Evaporation Device with Nanoporous Membrane for High Heat Flux	Todd	Salamon
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48263	Single Phase and Two Phase Flow Characteristics and Heat Transfer in Micro-fin Tubes	Junye	Li
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48263	Single Phase and Two Phase Flow Characteristics and Heat Transfer in Micro-fin Tubes	Jing	Zhang
Thermal Management Using Micro Channels, Jets, Sprays	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	5-2-2	Pool and flow-boiling	InterPACKICN-MM2015-48263	Single Phase and Two Phase Flow Characteristics and Heat Transfer in Micro-fin Tubes	Jin-jia	Wei
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48143	Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels?	Hideo	Ide
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48143	Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels?	Eiji	Kinoshita
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48143	Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels?	Ryo	Kuroshima
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48143	Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels?	Takeshi	Otaka
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48143	Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels?	Yuichi	Shibata
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48143	Effect of Tube Diameter on Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels?	Masahiro	Kawaji
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48325	Pressure Loss of Water Flow and Flow Boiling Heat Transfer in Microtubes	Takeya	Okamoto
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48325	Pressure Loss of Water Flow and Flow Boiling Heat Transfer in Microtubes	Hiroyasu	Ohtake
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48325	Pressure Loss of Water Flow and Flow Boiling Heat Transfer in Microtubes	Koji	Hasegawa
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48272	Heat Transfer in Liquild-Liquid Taylor Flow in a Mini-Scale Tube With Constant Wall Temperture	Wesam	Adrugi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48272	Heat Transfer in Liquild-Liquid Taylor Flow in a Mini-Scale Tube With Constant Wall Temperture	Kevin	Pope
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48426	Experimental Investigation on Flow Instability in a Single Vertical Microtube	Qian	You
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48426	Experimental Investigation on Flow Instability in a Single Vertical Microtube	Ibrahim	Hassan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48426	Experimental Investigation on Flow Instability in a Single Vertical Microtube	Lyes	Kadem
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48221	High Flow Rate Micro Orifice Dispersion of Gas-Liquid Flow	Norbert	Kockmann
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48221	High Flow Rate Micro Orifice Dispersion of Gas-Liquid Flow	Alexander	Tollkoetter
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48221	High Flow Rate Micro Orifice Dispersion of Gas-Liquid Flow	Florian	Schirmbeck
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	03:30 PM - 05:00 PM	6-2-7	Experimental Investigation of Two Phase Flows II	InterPACKICN-MM2015-48221	High Flow Rate Micro Orifice Dispersion of Gas-Liquid Flow	Jens	Wesholowski

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48034	Simulation of Heat Transfer Across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-Model and DSMC Methods Results	Dilesh	Maharjan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48034	Simulation of Heat Transfer Across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-Model and DSMC Methods Results	Mustafa	HADJ-NACER
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48034	Simulation of Heat Transfer Across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-Model and DSMC Methods Results	Minh-Tuan	Ho
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48034	Simulation of Heat Transfer Across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-Model and DSMC Methods Results	Stefan	Stefanov
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48034	Simulation of Heat Transfer Across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-Model and DSMC Methods Results	Irina	Graur
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48034	Simulation of Heat Transfer Across Rarefied Gas in Annular and Planar Geometries: Comparison of Navier-Stokes, S-Model and DSMC Methods Results	Miles	Greiner
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48054	Mass Flow Rate Measurements Through Metallic Microtubes in the Slip and Transition Regimes	Ernane	Silva
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48054	Mass Flow Rate Measurements Through Metallic Microtubes in the Slip and Transition Regimes	Marcos	Rojas-Cardenas
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48054	Mass Flow Rate Measurements Through Metallic Microtubes in the Slip and Transition Regimes	Cesar J.	Deschamps
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48128	Conjugate Heat Transfer Simulation in Gaseous Flow Micro Heat Exchanger	Giulio	Croce
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48128	Conjugate Heat Transfer Simulation in Gaseous Flow Micro Heat Exchanger	Michele A.	Coppola
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48291	Molecular Free Paths of Argon Gas in Nano-Scale Channels	Murat	Barisik
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48291	Molecular Free Paths of Argon Gas in Nano-Scale Channels	Ali	Beskok
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48484	Compact Slip Flow Models for Gas Flows in Rectangular, Trapezoidal and Hexagonal Microchannels	Michael	Yovanovich
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Monday, July 06, 2015	05:30 PM - 07:00 PM	6-1-5	Non Equilibrium Gas Flows	InterPACKICN-MM2015-48484	Compact Slip Flow Models for Gas Flows in Rectangular, Trapezoidal and Hexagonal Microchannels	Waqar A.	Khan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48030	Lattice Boltzmann Simulation of Rarefied Gas Flow along Moving Rigid Objects in Microcavities	Weilin	Yang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48834	Experimental Investigation of Geometrical Parameters for Gas-Liquid Droplet Generation in Flow Focusing Configurations	Pooyan	Tirandazi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48030	Lattice Boltzmann Simulation of Rarefied Gas Flow along Moving Rigid Objects in Microcavities	Hongxia	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48834	Experimental Investigation of Geometrical Parameters for Gas-Liquid Droplet Generation in Flow Focusing Configurations	Carlos	Hidrovo

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48030	Lattice Boltzmann Simulation of Rarefied Gas Flow along Moving Rigid Objects in Microcavities	Ibrahim M.	Elfadel
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48030	Lattice Boltzmann Simulation of Rarefied Gas Flow along Moving Rigid Objects in Microcavities	TieJun	Zhang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48167	Study on the Motion of Magnetic Particles Contained in a Liquid Slug in a Microtube	Osamu	Okamoto
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48241	Influence of Reynolds Number of Tube Flow on Coalescence of Droplets in a Tube Creeping Flow	Masahiro	Muraoka
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48099	Heat Transfer through a Condensate Droplet	Shreyas	Chavan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48241	Influence of Reynolds Number of Tube Flow on Coalescence of Droplets in a Tube Creeping Flow	Yuuki	Kumagai
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48099	Heat Transfer through a Condensate Droplet	Kashif	Nawaz
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48241	Influence of Reynolds Number of Tube Flow on Coalescence of Droplets in a Tube Creeping Flow	Yuuta	Yatagawa
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48099	Heat Transfer through a Condensate Droplet	Yip-Fun	Yeung
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-2-6	Two Phase Flow Microfluidics	InterPACKICN-MM2015-48241	Influence of Reynolds Number of Tube Flow on Coalescence of Droplets in a Tube Creeping Flow	Ichiro	Ueno
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48099	Heat Transfer through a Condensate Droplet	Nenad	Miljkovic
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48126	Numerical Investigation of Heat Transfer in Rough Microchannels Using a Kinetic-Continuum Hybrid Solver	Olga	Rovenskaya
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48264	Numerical Analysis of Heat Transfer Characteristics for Supercritical Aviation Kerosene	Yachao	Song
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48264	Numerical Analysis of Heat Transfer Characteristics for Supercritical Aviation Kerosene	Danjiao	Ma
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48264	Numerical Analysis of Heat Transfer Characteristics for Supercritical Aviation Kerosene	Jingzhi	Zhang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48264	Numerical Analysis of Heat Transfer Characteristics for Supercritical Aviation Kerosene	Jing-xiang	Chen
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48264	Numerical Analysis of Heat Transfer Characteristics for Supercritical Aviation Kerosene	Songze	Chen
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	6-3-1	Continuum/Atomistic Modeling and Simulations 1	InterPACKICN-MM2015-48411	Modeling and Simulation of Nondiffusive Heat Transfer in Semiconductors Outside of the Framework of Fourier?s Law	Yanbao	Ma
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48149	Flow and Heat Transfer in Liquid Films Flowing over Highly Curved Surfaces	Zezhi	Zeng
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48149	Flow and Heat Transfer in Liquid Films Flowing over Highly Curved Surfaces	Gopinath	Warrier
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48149	Flow and Heat Transfer in Liquid Films Flowing over Highly Curved Surfaces	Yongho	Ju
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48223	Measurement of effective capillary radius and contact angle within wick structures	Saitej	Ravi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48569	A NEW ALGORITHM FOR CONTACT ANGLE ESTIMATION IN MOLECULAR DYNAMICS SIMULATIONS	Sumith	YesudasanDaisy

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48223	Measurement of effective capillary radius and contact angle within wick structures	David	Horner
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48569	A NEW ALGORITHM FOR CONTACT ANGLE ESTIMATION IN MOLECULAR DYNAMICS SIMULATIONS	Shalabh	Maroo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48282	Nanoscopic Topography of Thin Water Film at Equilibrium State	Yajun	Deng
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48716	Modeling of a Non-Periodic Boundary Condition With Entrance and Exit in Dissipative Particle Dynamics	Erik	Johansson
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48282	Nanoscopic Topography of Thin Water Film at Equilibrium State	Lei	Chen
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48716	Modeling of a Non-Periodic Boundary Condition With Entrance and Exit in Dissipative Particle Dynamics	Toru	Yamada
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48282	Nanoscopic Topography of Thin Water Film at Equilibrium State	Jiapeng	Yu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48716	Modeling of a Non-Periodic Boundary Condition With Entrance and Exit in Dissipative Particle Dynamics	Jinliang	Yuan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48282	Nanoscopic Topography of Thin Water Film at Equilibrium State	Hao	Wang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48716	Modeling of a Non-Periodic Boundary Condition With Entrance and Exit in Dissipative Particle Dynamics	Bengt	Sundén
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48530	Micro/Nano Patterning of Thin Ionic Liquid Films Using Heterogeneous Electric Field	Hadi	Nazaripoor
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48530	Micro/Nano Patterning of Thin Ionic Liquid Films Using Heterogeneous Electric Field	Charles R	koch
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48530	Micro/Nano Patterning of Thin Ionic Liquid Films Using Heterogeneous Electric Field	Mohtada	Sadrzadeh
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48530	Micro/Nano Patterning of Thin Ionic Liquid Films Using Heterogeneous Electric Field	Subir	Bhattacharjee
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48532	Modeling of Flow and Heat Transfer in a Molten Glass Mini-Film for High Temperature Heat Collection in a Falling-Film Solar Central Receiver	Ruth H.	Reed
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48532	Modeling of Flow and Heat Transfer in a Molten Glass Mini-Film for High Temperature Heat Collection in a Falling-Film Solar Central Receiver	Benjamin	Elkin
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48532	Modeling of Flow and Heat Transfer in a Molten Glass Mini-Film for High Temperature Heat Collection in a Falling-Film Solar Central Receiver	Justin	Raade
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-6-1	Thin film transport phenomena	InterPACKICN-MM2015-48532	Modeling of Flow and Heat Transfer in a Molten Glass Mini-Film for High Temperature Heat Collection in a Falling-Film Solar Central Receiver	Van P.	Carey
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48078	A Molecular Dynamics Study for Stability of Thin Water Films on Nanostructured Surfaces	Liyong	Sun
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48078	A Molecular Dynamics Study for Stability of Thin Water Films on Nanostructured Surfaces	Jun	Zhou
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48388	Droplet formation in a T-junction microfluidic device in the presence of an electric field	Zeeshan	Ahmad
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48388	Droplet formation in a T-junction microfluidic device in the presence of an electric field	Rattandeep	Singh

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48388	Droplet formation in a T-junction microfluidic device in the presence of an electric field	Supreet Singh	Bahga
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	6-3-2	Continuum/Atomistic Modeling and Simulations 2	InterPACKICN-MM2015-48388	Droplet formation in a T-junction microfluidic device in the presence of an electric field	Amit	Gupta
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48162	Influence of Wettability and Geometric Patterns of Micro/Nano-Engineered Surfaces on Water Harvesting Performance	Donghyeon	Seo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48032	Intrinsic Thermal Conductivity of Wurtzite AlxGa1-xN, InxGa1-xN and InxAl1-xN from First-principles Calculation	Jinlong	Ma
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48032	Intrinsic Thermal Conductivity of Wurtzite AlxGa1-xN, InxGa1-xN and InxAl1-xN from First-principles Calculation	Baoling	Huang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48162	Influence of Wettability and Geometric Patterns of Micro/Nano-Engineered Surfaces on Water Harvesting Performance	Choongyeop	Lee
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48032	Intrinsic Thermal Conductivity of Wurtzite AlxGa1-xN, InxGa1-xN and InxAl1-xN from First-principles Calculation	Wu	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48162	Influence of Wettability and Geometric Patterns of Micro/Nano-Engineered Surfaces on Water Harvesting Performance	Youngsuk	Nam
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48114	The Prediction of the Thermal Conductivity of Gallium Arsenide: a Molecular Dynamics Study	Fernan	Saiz
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48774	Active Surfaces: Ferrofluid-Impregnated Surfaces for Active Manipulation of Droplets	Karim	Khalil
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48114	The Prediction of the Thermal Conductivity of Gallium Arsenide: a Molecular Dynamics Study	Cristina H.	Amon
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48774	Active Surfaces: Ferrofluid-Impregnated Surfaces for Active Manipulation of Droplets	Seyed Reza	Mahmoudi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48774	Active Surfaces: Ferrofluid-Impregnated Surfaces for Active Manipulation of Droplets	Numan	Abu-Dheir
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48826	On the Lifetime of Non-coalescent Levitated Droplets	Ashkan	Davanlou
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48428	Microchannel Flow Enhancement by Microplasma Actuation	Gayathri	Shivkumar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48428	Microchannel Flow Enhancement by Microplasma Actuation	Siva	Tholeti
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48826	On the Lifetime of Non-coalescent Levitated Droplets	Ranganathan	Kumar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48428	Microchannel Flow Enhancement by Microplasma Actuation	Alina	Alexeenko
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48723	Design of Multiscale Nanofluidic Networks	David	Stephenson
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48723	Design of Multiscale Nanofluidic Networks	Duncan A.	Lockerby
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48762	Controlling Dynamic Wetting by Surface Charges and Microstructures	Jiayu	Wang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48723	Design of Multiscale Nanofluidic Networks	Matthew K.	Borg
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48762	Controlling Dynamic Wetting by Surface Charges and Microstructures	Minh	Do-Quang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48762	Controlling Dynamic Wetting by Surface Charges and Microstructures	Yue	Feng
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48723	Design of Multiscale Nanofluidic Networks	Jason M.	Reese
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48762	Controlling Dynamic Wetting by Surface Charges and Microstructures	Yuji	Suzuki
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48762	Controlling Dynamic Wetting by Surface Charges and Microstructures	Gustav	Amberg
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48750	Molecular Dynamics Simulation Study Into The Correlation Of Thermo-physical Properties Of Water-Alcohol Mixtures	James	Cannon
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48672	Thermal Performance of Triangulated Array of Droplet Streams	Taolue	Zhang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48750	Molecular Dynamics Simulation Study Into The Correlation Of Thermo-physical Properties Of Water-Alcohol Mixtures	Tohru	Kawaguchi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48672	Thermal Performance of Triangulated Array of Droplet Streams	Jorge	Alvarado
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48750	Molecular Dynamics Simulation Study Into The Correlation Of Thermo-physical Properties Of Water-Alcohol Mixtures	Takashi	Kaneko
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-3-3	Continuum/Atomistic Modeling and Simulations 3	InterPACKICN-MM2015-48750	Molecular Dynamics Simulation Study Into The Correlation Of Thermo-physical Properties Of Water-Alcohol Mixtures	Takuya	Fuse
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48218	Marangoni flow induced self-assembling of nanomotors	Fengchang	Yang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48218	Marangoni flow induced self-assembling of nanomotors	Manoj	Manjare
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48218	Marangoni flow induced self-assembling of nanomotors	Yiping	Zhao
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	6-6-2	Droplet dynamics	InterPACKICN-MM2015-48218	Marangoni flow induced self-assembling of nanomotors	Rui	Qiao
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48075	Stability Analysis of Oscillating Electrolytes	Prateek	Gupta
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Cong	Guo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Tao	Wang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Yu Yan	Jiang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Chaohong	Guo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Miao	Zeng
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Dong	Yu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48251	An Improved Correlation For Void Fraction During In-tube Condensation	Dawei	Tang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Xiaopeng	Qu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48089	Effect of Surface Conduction on Propagation of Ion-Concentration Shock Waves in Isotachophoresis	Mayank	Khichar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48555	Thermodynamic Analysis of the Transition Between Slug and Annular Flow in Minichannels	Dolaana	Khovalyg
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Jonathan	Boreyko

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48089	Effect of Surface Conduction on Propagation of Ion-Concentration Shock Waves in Isotachophoresis	Romir	Moza
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48555	Thermodynamic Analysis of the Transition Between Slug and Annular Flow in Minichannels	Predrag	Hrnjak
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Fangjie	Liu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48555	Thermodynamic Analysis of the Transition Between Slug and Annular Flow in Minichannels	Anthony	Jacobi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Rebecca	Agapov
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Nick	Lavrik
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Scott T.	Retterer
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	James J.	Feng
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Patrick	Collier
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48116	Self-Propelled Sweeping Removal of Dropwise Condensate on Hierarchical Superhydrophobic Surfaces	Chuan-Hua	Chen
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48230	Enhancing the Coalescence-Induced Jumping Droplet Velocity via Multi-Droplet Coalescence	Moon-Kyung	Kim
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48343	Parametric Study of Dielectrophoretic Interactive Motion of Particles	Mohammad	Hossan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48721	Pressure Drop for Single-and Two-Phase Flows Through a Return Bend in Horizontal Rectangular Microchannel and Minichannel	Akimaro	Kawahara
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48230	Enhancing the Coalescence-Induced Jumping Droplet Velocity via Multi-Droplet Coalescence	Hyeongyun	Cha
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48343	Parametric Study of Dielectrophoretic Interactive Motion of Particles	Matthew	Benton
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48721	Pressure Drop for Single-and Two-Phase Flows Through a Return Bend in Horizontal Rectangular Microchannel and Minichannel	Michio	Sadatomi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48230	Enhancing the Coalescence-Induced Jumping Droplet Velocity via Multi-Droplet Coalescence	Yuehan	Xu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48343	Parametric Study of Dielectrophoretic Interactive Motion of Particles	Prashanta	Dutta
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48721	Pressure Drop for Single-and Two-Phase Flows Through a Return Bend in Horizontal Rectangular Microchannel and Minichannel	Shinichi	Miyagawa
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48230	Enhancing the Coalescence-Induced Jumping Droplet Velocity via Multi-Droplet Coalescence	Chen	Zhong
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48343	Parametric Study of Dielectrophoretic Interactive Motion of Particles	Robert	Dillon
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48721	Pressure Drop for Single-and Two-Phase Flows Through a Return Bend in Horizontal Rectangular Microchannel and Minichannel	Mohamed H.	Mansour

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Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48528	Use of a Separability Parameter for the Design of a High Frequency Dielectrophoresis Cell Sorter Device	hanieh	hadady
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48336	Controlling the Growth of Condensation and Frost with Chemical Micropatterns	Ryan R.	Hansen
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48528	Use of a Separability Parameter for the Design of a High Frequency Dielectrophoresis Cell Sorter Device	Sage	Hiibel
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48336	Controlling the Growth of Condensation and Frost with Chemical Micropatterns	Kevin R.	Murphy
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48528	Use of a Separability Parameter for the Design of a High Frequency Dielectrophoresis Cell Sorter Device	Doug	Redelman
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48528	Use of a Separability Parameter for the Design of a High Frequency Dielectrophoresis Cell Sorter Device	Emil	Geiger
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48355	Self-Assembly of Colloidal Particles Driven by Poiseuille and Electrosmotic Flow	Necmettin	Cevheri
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48760	Gas-water two phase transport in microchannels	Wenming	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-7-1	Advances In Electrokinetics and Electrophoresis	InterPACKICN-MM2015-48355	Self-Assembly of Colloidal Particles Driven by Poiseuille and Electrosmotic Flow	Minami	Yoda
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48760	Gas-water two phase transport in microchannels	Tamanna	Alam
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-2-1	Two Phase Flow in Microchannels and Minichannels	InterPACKICN-MM2015-48760	Gas-water two phase transport in microchannels	Chen	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	Anton	Hassebrook
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	Michael J.	Lucis
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	Jeffrey E.	Shield
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	Craig	Zuhlke
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	Troy	Anderson
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	Dennis R.	Alexander
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48459	Thermal Stability of Rare Earth Oxide Coated Superhydrophobic Microstructured Metallic Surfaces	George	Gogos
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48743	Hydrophobic Rare-earth Oxide Ceramics and their Application in Sustained Dropwise Condensation	Sami	Khan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48743	Hydrophobic Rare-earth Oxide Ceramics and their Application in Sustained Dropwise Condensation	Gisele	Azimi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	6-4-1	Condensation	InterPACKICN-MM2015-48743	Hydrophobic Rare-earth Oxide Ceramics and their Application in Sustained Dropwise Condensation	Adam	Paxson
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48464	A Photographic Study of Flow Boiling Stability on a Plain Surface With Tapered Manifold	Ankit	Kalani
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48246	Electrokinetic Transport in Nanochannels Grafted with Polyelectrolyte With pH-Dependent Charge Density	Siddhartha	Das

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Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48246	Electrokinetic Transport in Nanochannels Grafted with Polyelectrolyte With pH-Dependent Charge Density	Guang	Chen
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48330	The Influence of Electroosmotic Flow on the von Kármán Vortex Street in the Wake of a Cylinder Located in a Microchannel	Mathias	Scholz
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48184	Visualization of Confined Jet Impingement with Boiling using Time-Resolved Stereo-PIV	Matthew J.	Rau
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48330	The Influence of Electroosmotic Flow on the von Kármán Vortex Street in the Wake of a Cylinder Located in a Microchannel	Dominik P.J.	Barz
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48184	Visualization of Confined Jet Impingement with Boiling using Time-Resolved Stereo-PIV	Tianqi	Guo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48184	Visualization of Confined Jet Impingement with Boiling using Time-Resolved Stereo-PIV	Pavlos P.	Vlachos
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48304	Visualization of Spray Structure at the Outlet of the Micro Orifices	Morteza	Ghorbani
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48481	Heat Transfer During Evaporation and Boiling at the Three-Phase Contact Line Region ? A Critical Review	Pruthvik	Raghupathi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48547	Study of the Transient Electroosmotic Flow of Maxwell Fluids in Square Cross-Section Microchannels	Juan P.	Escandón
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48304	Visualization of Spray Structure at the Outlet of the Micro Orifices	Ali	Kosar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48547	Study of the Transient Electroosmotic Flow of Maxwell Fluids in Square Cross-Section Microchannels	Edson M.	Jiménez
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48547	Study of the Transient Electroosmotic Flow of Maxwell Fluids in Square Cross-Section Microchannels	Oscar E.	Bautista
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48722	Novel in-Plane Dielectrophoresis for Microfluidic Pattering of Densely Dispersed Particles with an Application in Electronic Paper Display	Qain	Liang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48722	Novel in-Plane Dielectrophoresis for Microfluidic Pattering of Densely Dispersed Particles with an Application in Electronic Paper Display	Chun	Yang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48570	Contact Angle of Vapor Bubble on Hydrophobic and Hydrophilic Surfaces in Pool Boiling	Ashish	Chanana
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48776	Effect of Hydrodynamic Slippage on Oscillating Electroosmotic Flows in Infinitely Extended Microcapillary	Guillermo	Rojas
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48177	Quantitative Visualization of Vapor Bubble Growth in Diabatic Vapor-Liquid Microchannel Slug Flow	Todd A.	Kingston
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48570	Contact Angle of Vapor Bubble on Hydrophobic and Hydrophilic Surfaces in Pool Boiling	An	Zou
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48570	Contact Angle of Vapor Bubble on Hydrophobic and Hydrophilic Surfaces in Pool Boiling	Amit	Agrawal
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-7-2	Fundamentals of Electrokinetic Flow	InterPACKICN-MM2015-48776	Effect of Hydrodynamic Slippage on Oscillating Electroosmotic Flows in Infinitely Extended Microcapillary	Federico	Méndez
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48570	Contact Angle of Vapor Bubble on Hydrophobic and Hydrophilic Surfaces in Pool Boiling	Peter	Wayner

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Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48661	Experimental Verification of Analytical Prediction of Pool Boiling CHF Incorporating the Effects of EHD and Contact Angle	Ichiro	Kano
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48821	Visualization of Two-Phase Flow Through Microchannel Heat Exchangers	Dhruv Chanakya	Hoysall
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48661	Experimental Verification of Analytical Prediction of Pool Boiling CHF Incorporating the Effects of EHD and Contact Angle	Takahiro	Sato
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48821	Visualization of Two-Phase Flow Through Microchannel Heat Exchangers	Khoudor	Keniar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48661	Experimental Verification of Analytical Prediction of Pool Boiling CHF Incorporating the Effects of EHD and Contact Angle	Naoki	Okamoto
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-2-2	Flow Visualization of Two Phase Flows	InterPACKICN-MM2015-48821	Visualization of Two-Phase Flow Through Microchannel Heat Exchangers	Srinivas	Garimella
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	09:30 AM - 11:00 AM	6-4-2	Pool Boiling: Contact Line and Bubble Dynamics	InterPACKICN-MM2015-48796	Observation of bubble dynamics and the mechanism of the boiling crisis on textured hydrophilic surfaces	Jacopo	Buongiorno
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48561	Computational and Experimental Study of Gas Bubbles Removal in a Microfluidic System	Hamed	Gholami Derami
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48220	Continuum Simulations of Salt Solution Flow in TMV-based Biological Membrane for Water Desalination	Srikumar	Krishnamoorthy
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48212	Heat transfer performance of supercritical carbon dioxide in microchannels	Chien-Yuh	Yang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48561	Computational and Experimental Study of Gas Bubbles Removal in a Microfluidic System	Jeff	Darabi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48212	Heat transfer performance of supercritical carbon dioxide in microchannels	Kun-Chieh	Liao
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48806	Simulation of wave propagations in the two-phase flow	Moon-sun	Chung
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48327	Electric Control of Liquid Metal Flow in Capillary	Lei	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48477	Effect of Channel Width on Pool Boiling Enhancement of Open Microchannels With Selective Sintered Porous Coatings	Arvind	Jaikumar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48446	Electrothermally Driven Flow at High Conductivity Medium	Anil	Koklu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48446	Electrothermally Driven Flow at High Conductivity Medium	Ahmet C.	Sabuncu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48446	Electrothermally Driven Flow at High Conductivity Medium	Amin	Mansoorifar
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48492	Validation of fluid transport within a liquid droplet undergoing electrowetting	Nicholas G.	Garafolo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48337	Numerical Modeling of Pore Fluid Flow in Reconstructed Porous Media	Zhenyu	Liu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48492	Validation of fluid transport within a liquid droplet undergoing electrowetting	Andrew	Killmeyer
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48337	Numerical Modeling of Pore Fluid Flow in Reconstructed Porous Media	Huiying	Wu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48509	Critical Heat Flux of Graphene Coated Copper Surface at High Pressures	Nanxi	Li

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48451	Electrostatic Preclusion of Droplet Adhesion in a Microchannel	Jonathan C.	Hui
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48589	Nonlinear Electrokinetic Effects on Particle Motion Near a Microchannel Constriction	Naga	Dingari
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48509	Critical Heat Flux of Graphene Coated Copper Surface at High Pressures	Amy	Betz
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-2-3	Numerical Investigation of Two Phase Flows - I	InterPACKICN-MM2015-48451	Electrostatic Preclusion of Droplet Adhesion in a Microchannel	Peter	Huang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48589	Nonlinear Electrokinetic Effects on Particle Motion Near a Microchannel Constriction	Qianru	Wang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-7-3	Electrokinetics and Electrohydrodynamics	InterPACKICN-MM2015-48589	Nonlinear Electrokinetic Effects on Particle Motion Near a Microchannel Constriction	Cullen	Buie
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48548	Pool Boiling Heat Transfer Enhancement using Surfaces with Mixed Thermal Conductivity	MD Mahamudur	Rahman
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48548	Pool Boiling Heat Transfer Enhancement using Surfaces with Mixed Thermal Conductivity	Matthew	McCarthy
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48667	Film Boiling Heat Transfer Enhancement via Electrostatic Leidenfrost State Suppresion	Arjang	Shahriari
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	01:00 PM - 02:30 PM	6-4-3	Pool Boiling: Heat Transfer Enhancement	InterPACKICN-MM2015-48667	Film Boiling Heat Transfer Enhancement via Electrostatic Leidenfrost State Suppresion	Vaibhav	Bahadur
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48077	Heat Transfer Enhancement of Microchannel Heat Sink with Rib Shaped Vortex Generators	Yeong-Ley	Tsay
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48047	Comprehensive Two Fluid Model Simulation of Critical Two-Phase Flow Through Short Tube Orifices	puya	javidmand
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48077	Heat Transfer Enhancement of Microchannel Heat Sink with Rib Shaped Vortex Generators	Jen-Chieh	Cheng
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48047	Comprehensive Two Fluid Model Simulation of Critical Two-Phase Flow Through Short Tube Orifices	Klaus	Hoffmann
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48240	Flow and heat transfer characteristics in high porosity metal foams	Dae Yeon	Kim
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48240	Flow and heat transfer characteristics in high porosity metal foams	Daeyeon	Kim
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48240	Flow and heat transfer characteristics in high porosity metal foams	Sang Youl	Yoon
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48240	Flow and heat transfer characteristics in high porosity metal foams	Kyung Chun	Kim
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48482	Exploration of Phase Change Within a Capillary Flow Driven Square Micro-Channel Using Lattice Boltzmann Method and Experimental Boundary Conditions	Eric	Borquist
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48673	Mixed Convection Heat Transfer of Supercritical CO2 in Miniature Tube	Wei-Mon	Yan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48482	Exploration of Phase Change Within a Capillary Flow Driven Square Micro-Channel Using Lattice Boltzmann Method and Experimental Boundary Conditions	Leland	Weiss
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48673	Mixed Convection Heat Transfer of Supercritical CO2 in Miniature Tube	Yen-Joe	Ye
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48482	Exploration of Phase Change Within a Capillary Flow Driven Square Micro-Channel Using Lattice Boltzmann Method and Experimental Boundary Conditions	Greg	Smith

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48799	Numerical Modeling of Forced Convective Transport in a Channel with Conducting-Lubricating (CO-LUB) Surfaces	Jessica	Reyes
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-1-4	Heat Transfer in Single Phase Flows	InterPACKICN-MM2015-48799	Numerical Modeling of Forced Convective Transport in a Channel with Conducting-Lubricating (CO-LUB) Surfaces	Krishna	Kota
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48117	Multiphase Approach on Heat Transfer Performance of Microchannel using Hybrid Carbon Nanofluid	Rajesh	Nimmagadda
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	02:45 PM - 04:15 PM	6-2-4	Numerical Investigation of Two Phase Flows - II	InterPACKICN-MM2015-48117	Multiphase Approach on Heat Transfer Performance of Microchannel using Hybrid Carbon Nanofluid	K	Venkatasubbaiah
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48202	Experimental Investigation of Evaporation and Condensation in Herringbone: Smooth and EHT Tubes	sun	zhichuan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48317	Flow Boiling Heat Transfer Coefficient of DI-Water/SiO2 Nanofluid Inside a 1.1 mm Round Microchannel	Tiago A.	Moreira
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48317	Flow Boiling Heat Transfer Coefficient of DI-Water/SiO2 Nanofluid Inside a 1.1 mm Round Microchannel	Francisco J.	do Nascimento
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48317	Flow Boiling Heat Transfer Coefficient of DI-Water/SiO2 Nanofluid Inside a 1.1 mm Round Microchannel	Gherhardt	Ribatski
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48663	Measurement of Liquid Film Thickness in Slug Flow of Air and Viscous Liquid in a Microchannel	Lok	Fung
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48406	Boiling Heat Transfer Performance in a Spiraling Radial Inflow Microchannel Cold Plate	Maritza	Ruiz
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48091	Subcooled Flow Boiling Over Microstructured Al-Alloy Plates in Rectangular Channel	Yagmur	Sisman
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48406	Boiling Heat Transfer Performance in a Spiraling Radial Inflow Microchannel Cold Plate	Claire M	Kunkle
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48406	Boiling Heat Transfer Performance in a Spiraling Radial Inflow Microchannel Cold Plate	Jorge	Padilla Jr
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48091	Subcooled Flow Boiling Over Microstructured Al-Alloy Plates in Rectangular Channel	Khedir R.	Khedir
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48091	Subcooled Flow Boiling Over Microstructured Al-Alloy Plates in Rectangular Channel	Tansel	Karabacak
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48090	Flow Boiling Heat Transfer Characteristics of gamma-Al2O3/water Nanofluid in Horizontal Microtubes	Mehrdad	Karimzadehkhouei
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48737	Integrate Monolithic Nanostructures in Microchannels to Enhance Flow Boiling Heat Transfer of HFE-7000	Xiaochuan	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48090	Flow Boiling Heat Transfer Characteristics of gamma-Al2O3/water Nanofluid in Horizontal Microtubes	Sinan Eren	Yalcin
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48090	Flow Boiling Heat Transfer Characteristics of gamma-Al2O3/water Nanofluid in Horizontal Microtubes	Kursat	Sendur
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48090	Flow Boiling Heat Transfer Characteristics of gamma-Al2O3/water Nanofluid in Horizontal Microtubes	M. Pinar	Menguc
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48314	Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels	Li	Zhang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48314	Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels	Hong	Xu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48314	Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels	Yan	Sun
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48314	Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels	Jiayin	Xu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48199	Evaporation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	Kan	Zhou
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48314	Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels	Jin	Xuan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-5-4	Two-Phase Flows	InterPACKICN-MM2015-48314	Visualization Research on Flow Boiling From Microporous Surface in Mini-/Microchannels	Qing	Luo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	6-2-5	Experimental Investigation of Two Phase Flows	InterPACKICN-MM2015-48199	Evaporation Heat Transfer Characteristics on the Outside of Horizontal Smooth, Herringbone and Enhanced Surface 1EHT Tubes	Yanping	Shi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48026	Homogeneous Vapor Nucleation of Electrolyte Solution Within a Nanopore	Ho-young	Kwak
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48074	Turbulent Flow in the Micro Structures of Porous Media	Heinz	Herwig
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48026	Homogeneous Vapor Nucleation of Electrolyte Solution Within a Nanopore	Jaekyoon	Oh
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48074	Turbulent Flow in the Micro Structures of Porous Media	Yan	Jin
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48026	Homogeneous Vapor Nucleation of Electrolyte Solution Within a Nanopore	Yungpil	Yoo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48074	Turbulent Flow in the Micro Structures of Porous Media	Marc-Florian	Uth
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48074	Turbulent Flow in the Micro Structures of Porous Media	Andrey	Kuznetsov
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48207	Heat and Mass Transfer Performance of Nanostructured Evaporator Wicks Combined with Porous Metal Liquid Supply Structures	Seunggeol	Ryu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48107	2D Lattice Boltzmann Simulation of Droplet Jumping in a Viscous Fluid	Shenghui	Lei
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48107	2D Lattice Boltzmann Simulation of Droplet Jumping in a Viscous Fluid	Ningning	Wang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48107	2D Lattice Boltzmann Simulation of Droplet Jumping in a Viscous Fluid	Haihu	Liu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48107	2D Lattice Boltzmann Simulation of Droplet Jumping in a Viscous Fluid	Ryan	Enright
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48107	2D Lattice Boltzmann Simulation of Droplet Jumping in a Viscous Fluid	Kevin	Nolan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48260	Localized, high heat flux, two phase cooling using capillary fed porous structures	James	Palko
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48273	Breakdown of Continuum Hypothesis in Nano-Scale Confined Liquid Flows	Jafar	Ghorbanian
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48260	Localized, high heat flux, two phase cooling using capillary fed porous structures	Thomas J	Dusseault
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48260	Localized, high heat flux, two phase cooling using capillary fed porous structures	Chi	Zhang

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48260	Localized, high heat flux, two phase cooling using capillary fed porous structures	Joshua	Wilbur
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48260	Localized, high heat flux, two phase cooling using capillary fed porous structures	Juan	Santiago
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48461	Effects of Fabrication Imperfections on Fully Developed Flow in Rectangular Micro-Channels	Isabela	Florindo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48262	Tailoring of Permeability in Copper Inverse Opal for Electronic Cooling Applications	Guoguang	Rong
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48461	Effects of Fabrication Imperfections on Fully Developed Flow in Rectangular Micro-Channels	Giacomo	Puccetti
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48461	Effects of Fabrication Imperfections on Fully Developed Flow in Rectangular Micro-Channels	Leandro	Sphaier
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48461	Effects of Fabrication Imperfections on Fully Developed Flow in Rectangular Micro-Channels	Gian Luca	Morini
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48358	Localized Heat for Efficient Evaporation	Nazanin	Farokhnia
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48463	Modeling Low Reynolds Number Flows Driven by Forward-Propagating and Reflected Boundary Waves in Concentric Micro-Cylinders	Mikhail	Coloma
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-5-1	Evaporation	InterPACKICN-MM2015-48358	Localized Heat for Efficient Evaporation	Hadi	Ghasemi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48463	Modeling Low Reynolds Number Flows Driven by Forward-Propagating and Reflected Boundary Waves in Concentric Micro-Cylinders	William M.	Buehler
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48463	Modeling Low Reynolds Number Flows Driven by Forward-Propagating and Reflected Boundary Waves in Concentric Micro-Cylinders	J. David	Schaffer
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	07:45 AM - 09:15 AM	6-1-1	Numerical Modeling of Single Phase Flows	InterPACKICN-MM2015-48463	Modeling Low Reynolds Number Flows Driven by Forward-Propagating and Reflected Boundary Waves in Concentric Micro-Cylinders	Paul R.	Chiarot
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48190	On the 3D Structure of Elasticity-Induced Unstable Flow in the Curved Microchannel by Using Confocal Micro-PIV and Polarized Camera	Xiao-Bin	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48190	On the 3D Structure of Elasticity-Induced Unstable Flow in the Curved Microchannel by Using Confocal Micro-PIV and Polarized Camera	Masamichi	Oishi
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48190	On the 3D Structure of Elasticity-Induced Unstable Flow in the Curved Microchannel by Using Confocal Micro-PIV and Polarized Camera	Marie	Oshima
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48190	On the 3D Structure of Elasticity-Induced Unstable Flow in the Curved Microchannel by Using Confocal Micro-PIV and Polarized Camera	Fengchen	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48190	On the 3D Structure of Elasticity-Induced Unstable Flow in the Curved Microchannel by Using Confocal Micro-PIV and Polarized Camera	Songjing	Li
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48294	Effect of Mechanical Vibration on Heat Transfer Characteristics of Liquid Film in Rectangular Microgrooves	Xuegong	Hu
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48540	Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging	Naoto	Kakuta

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48540	Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging	Daisuke	Kawashima
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48540	Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging	Hiroki	Yamashita
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48540	Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging	Katsuya	Kondo
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48540	Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging	Hidenobu	Arimoto
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48540	Quantification of Ethanol Diffusion in Water Using Near-infrared Imaging	Yukio	Yamada
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48595	Experimental Determination of Entropy Generation Rate Using Particle Image Velocimetry	James	Stewart
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48595	Experimental Determination of Entropy Generation Rate Using Particle Image Velocimetry	Brock	Ring
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48595	Experimental Determination of Entropy Generation Rate Using Particle Image Velocimetry	Brody	Tucker
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48595	Experimental Determination of Entropy Generation Rate Using Particle Image Velocimetry	Rodney	Worthen III
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48595	Experimental Determination of Entropy Generation Rate Using Particle Image Velocimetry	Evan	Lemley
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48657	Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging	Yoshiyasu	Ichikawa
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48657	Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging	Kojiro	Nishiwake
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48657	Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging	Hiromu	Wakayama
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48657	Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging	Yuki	Kameya
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48657	Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging	Makoto	Yamamoto
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	09:30 AM - 11:00 AM	6-1-2	Experiments in Single Phase Flows	InterPACKICN-MM2015-48657	Three Dimensional Measurement of Near-Wall Velocity in Millimeter Channel by a Single View Imaging	Masahiro	Motosuke
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48153	Experimental Study of Aqueous Binary Mixture Droplet Vaporization on Nanostructured Surfaces	Russell J.	LaBrie II
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-2	Boiling and Condensation	InterPACKICN-MM2015-48120	A State-of-the-art Review on Pool Boiling on Nanostructure Surfaces	Isabela	Ignácio
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-2	Boiling and Condensation	InterPACKICN-MM2015-48120	A State-of-the-art Review on Pool Boiling on Nanostructure Surfaces	Elaine Maria	Cardoso
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48055	Thermal Solution of High Flux Phased Radar Antenna For Military Application	Murat	YABAN
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48153	Experimental Study of Aqueous Binary Mixture Droplet Vaporization on Nanostructured Surfaces	Jorge	Padilla Jr.
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-2	Boiling and Condensation	InterPACKICN-MM2015-48120	A State-of-the-art Review on Pool Boiling on Nanostructure Surfaces	José Luiz	Gasche
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48352	Molecular Dynamics Study on Explosive Boiling of Thin Liquid Argon Film on Nanostructured Surface Under Different Wetting Conditions	Sheikh Mohammad	Shavik
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-2	Boiling and Condensation	InterPACKICN-MM2015-48203	Experimental Research on Condensation Outside a Horizontal Tube at Low Mass Fluxes	Xu	Chen

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48352	Molecular Dynamics Study on Explosive Boiling of Thin Liquid Argon Film on Nanostructured Surface Under Different Wetting Conditions	Mohammad Nasim	Hasan
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48352	Molecular Dynamics Study on Explosive Boiling of Thin Liquid Argon Film on Nanostructured Surface Under Different Wetting Conditions	A.K.M. Monjur	Morshed
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48508	Adsorption-Based Thermal Rectifier	Tadeh	Avanessian
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48417	Micro-Feature Heat Exchanger Using Variable-Density Arrays for Near-Isothermal Cold Plate Operation	Noris	Gallandat
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48417	Micro-Feature Heat Exchanger Using Variable-Density Arrays for Near-Isothermal Cold Plate Operation	Danielle	Hesse
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48417	Micro-Feature Heat Exchanger Using Variable-Density Arrays for Near-Isothermal Cold Plate Operation	J.	Mayor
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48500	Numerical Analysis of Fluid Flow Through a Flexible Microstructure Induced by Acoustic Streaming	Bryan C.	Rich
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48628	Boiling/Evaporation Characteristics of a Droplet on a Nano-Particles-Accumulated Bi-Porous Layer	Kazuhisa	Yuki
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48628	Boiling/Evaporation Characteristics of a Droplet on a Nano-Particles-Accumulated Bi-Porous Layer	Katsuki	Fukushima
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48628	Boiling/Evaporation Characteristics of a Droplet on a Nano-Particles-Accumulated Bi-Porous Layer	Koichi	Suzuki
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-5-3	Films, Droplets, and Particles	InterPACKICN-MM2015-48687	Metal Surface Wettability Manipulation by Nanoparticle Deposition During Nanofluid Boiling	Feini	Zhang
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48701	The Influence of Confinement on the Hydrodynamic Characteristics of a Cylindrical Pillar Within a Microchannel	John Patrick	O'Connor
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48701	The Influence of Confinement on the Hydrodynamic Characteristics of a Cylindrical Pillar Within a Microchannel	Jeffrey	Punch
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48701	The Influence of Confinement on the Hydrodynamic Characteristics of a Cylindrical Pillar Within a Microchannel	Nicholas	Jeffers
Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales	Thursday, July 09, 2015	01:00 PM - 02:30 PM	6-1-3	Single Phase Flows and System Design	InterPACKICN-MM2015-48701	The Influence of Confinement on the Hydrodynamic Characteristics of a Cylindrical Pillar Within a Microchannel	Jason	Stafford
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48046	Experimental and Analytical Study of Micro-Serrations on Surgical Blades	Marco	Giovannini
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48046	Experimental and Analytical Study of Micro-Serrations on Surgical Blades	Newell	Moser
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48046	Experimental and Analytical Study of Micro-Serrations on Surgical Blades	Kornel	Ehmann
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48366	Development of a Protocol for Determining the Compressive Behavior of an Ultra-Thin Elastoviscoplatic Membrane Used in Sealing a Microchannel Hemodialyser	Patrick	McNeff
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48366	Development of a Protocol for Determining the Compressive Behavior of an Ultra-Thin Elastoviscoplatic Membrane Used in Sealing a Microchannel Hemodialyser	Brian	Paul

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48381	Investigation on Singular Fields at the Vertex of Interface in Piezo Electric Material Joints and its Application	Tomiya	Maekawa
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48453	Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing	Alfred	Tsubaki
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48453	Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing	Corey	Kruse
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48453	Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing	Xiaoming	Wang
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48453	Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing	Hai-En	Tsai
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48453	Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing	Joseph	Shaw
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	7-1-1	Novel fabrication methods- I	InterPACKICN-MM2015-48453	Self-Organized Micro/Nanostructure Formation on Critical Heat Transfer Materials Using Femtosecond Laser Surface Processing	Michael C.	Downer
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48575	Structure of Colloidal Dispersions Printed Using Electrospray	Nicholas A.	Brown
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48591	Electrospray Deposition On Uneven Surfaces	Sepehr	Maktabi
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48160	Nanomaterials pattering using an inkjet printing	Changho	Choi
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48160	Nanomaterials pattering using an inkjet printing	Zhongwei	Gao
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48160	Nanomaterials pattering using an inkjet printing	Alvin	Chang
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48160	Nanomaterials pattering using an inkjet printing	Chih-Hung	Chang
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48449	A Model to Guide Template-Based Nanoparticle Printing Development	David A.	Rolfe
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48449	A Model to Guide Template-Based Nanoparticle Printing Development	Kristen L	Dorsey
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	7-1-2	Novel Fabrication Methods II	InterPACKICN-MM2015-48449	A Model to Guide Template-Based Nanoparticle Printing Development	Jim C.	Cheng
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48127	Hybrid Materials Deposition Technology Dedicated to Ceramics Smart 3D Printing	Rémi	Noguéra
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48127	Hybrid Materials Deposition Technology Dedicated to Ceramics Smart 3D Printing	Tim	Luong
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48159	Additive Fabrication of Superomniphobic Mushroom-Like Micropillars with Projection Micro-Stereolithography	Huifeng	Du
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48159	Additive Fabrication of Superomniphobic Mushroom-Like Micropillars with Projection Micro-Stereolithography	Abulimiti	Aili
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48159	Additive Fabrication of Superomniphobic Mushroom-Like Micropillars with Projection Micro-Stereolithography	Mohamed	Alhosani
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48159	Additive Fabrication of Superomniphobic Mushroom-Like Micropillars with Projection Micro-Stereolithography	Nicholas	Fang
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48187	3-D Antenna Structures Using Novel Direct-Write Additive Manufacturing Method	Md Taibur	Rahman

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48187	3-D Antenna Structures Using Novel Direct-Write Additive Manufacturing Method	Deuk	Heo
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48700	Direct Fabrication of Ending Functional Devices Through Hybrid 3D Printing of Liquid Metal and Allied Inks	Lei	Wang
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48700	Direct Fabrication of Ending Functional Devices Through Hybrid 3D Printing of Liquid Metal and Allied Inks	Li-Ting	Yi
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48700	Direct Fabrication of Ending Functional Devices Through Hybrid 3D Printing of Liquid Metal and Allied Inks	Yang	Yang
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	7-5-1	Micro/Nano-scale 3D Printing Technologies	InterPACKICN-MM2015-48700	Direct Fabrication of Ending Functional Devices Through Hybrid 3D Printing of Liquid Metal and Allied Inks	Bo-Wei	Chen
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48637	Review of Most Recent Progress on Development of Polymer Heat Exchangers for Thermal Management Applications	David C.	Deisenroth
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48637	Review of Most Recent Progress on Development of Polymer Heat Exchangers for Thermal Management Applications	Martinus Adrian	Arie
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48643	3D Additive Nanomanufacturing on the Anodized Aluminum Oxide Membrane for Capturing Solar Energy	Sang Hoon	Nam
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48643	3D Additive Nanomanufacturing on the Anodized Aluminum Oxide Membrane for Capturing Solar Energy	Yoonkyung	Lee
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48643	3D Additive Nanomanufacturing on the Anodized Aluminum Oxide Membrane for Capturing Solar Energy	Jin You	Lu
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48817	Additively-Manufactured Ti-6Al-4V Oscillating Heat Pipe with Multiple Channel Layers	Omar	Ibrahim
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48817	Additively-Manufactured Ti-6Al-4V Oscillating Heat Pipe with Multiple Channel Layers	Nima	Shamsaei
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48817	Additively-Manufactured Ti-6Al-4V Oscillating Heat Pipe with Multiple Channel Layers	Linkan	Bian
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48817	Additively-Manufactured Ti-6Al-4V Oscillating Heat Pipe with Multiple Channel Layers	Alaa	Elwany
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48150	Additively Manufactured Thin-Walled Polymer Heat Exchangers	Christopher S.	Roper
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48150	Additively Manufactured Thin-Walled Polymer Heat Exchangers	Randall C.	Schubert
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48150	Additively Manufactured Thin-Walled Polymer Heat Exchangers	David	Page
Advanced Fabrication and Manufacturing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	7-5-2	Additive Manufacturing for Thermal Applications	InterPACKICN-MM2015-48150	Additively Manufactured Thin-Walled Polymer Heat Exchangers	Christopher J.	Ro
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48222	Influence of Synthesis Conditions on the Transport Properties of Graphene Oxide Laminates	Abhilash	Paneri
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48298	MD evaluation of the vibrational spectra of DNA bases in the process of transport through graphene nanopore	Takumu	Kitani
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48490	Molecular Study of TMV Nano-Pore for Biological Membrane-based Water Desalination	Nikolay	Rodionov
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48725	Effects of Temperature and Pore Size on Water Diffusion Inside Carbon Nanotubes	Kuiwen	Zhao

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48238	Mitigation of Biofouling Through In-Plane Application of Weak DC Current in Presence of Antimicrobials	Marshal	Maskarenj
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48238	Mitigation of Biofouling Through In-Plane Application of Weak DC Current in Presence of Antimicrobials	Ravi	Chavali
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48238	Mitigation of Biofouling Through In-Plane Application of Weak DC Current in Presence of Antimicrobials	Ankita	Mathur
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48238	Mitigation of Biofouling Through In-Plane Application of Weak DC Current in Presence of Antimicrobials	Prakash	Ghosh
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Monday, July 06, 2015	03:30 PM - 05:00 PM	8-3-1	Transport in Membranes	InterPACKICN-MM2015-48238	Mitigation of Biofouling Through In-Plane Application of Weak DC Current in Presence of Antimicrobials	Sushanta	Mitra
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48544	Coupling Isotachophoresis and Affinity Chromatography for Rapid, Specific, and Efficient Affinity Purification of DNA from Whole Human Blood	Viktor	Shkolnikov
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48556	Synthetic Asymmetric Vesicles Built Using Microfluidic Technology at High-Throughput	Li	Lu
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48556	Synthetic Asymmetric Vesicles Built Using Microfluidic Technology at High-Throughput	Jeffrey W.	Schertzer
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48564	A Microfluidic Device for Continuous Manetophoretic Isolation of Monocytes	Chuan	Guo
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48022	Portable Blood Typing polymer Chip Based on Solvent Uptake Microstructure Formation	Yi-Ting	Huang
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48307	Possibility and Mechanism Study of Liquid-Metal Based Micro Electroosmotic Flow Pumps for Long-Time Running Purpose	Meng	Gao
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	8-2-1	Biomicro I	InterPACKICN-MM2015-48307	Possibility and Mechanism Study of Liquid-Metal Based Micro Electroosmotic Flow Pumps for Long-Time Running Purpose	Lin	Gui
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48520	Numerical Model of Template-Based Chemical Vapor Deposition Processes to Manufacture Carbon Nanotubes for Biological Devices	Yashar	Seyed Vahedein
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48520	Numerical Model of Template-Based Chemical Vapor Deposition Processes to Manufacture Carbon Nanotubes for Biological Devices	Michael	Schrlau
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48755	Controlled all aqueous two phase droplet generation with microfluidics	Byeong-Ui	Moon
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48755	Controlled all aqueous two phase droplet generation with microfluidics	Steven	Jones
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48755	Controlled all aqueous two phase droplet generation with microfluidics	Dae Kun	Hwang
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48755	Controlled all aqueous two phase droplet generation with microfluidics	Scott	Tsai
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48134	A Two-Dimensional Microfluidic-Based Tactile Sensor for Tissue Palpation Application under the Influence of Misalignment	Jiayue	Shen
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48498	Electrowetting on Dielectric (EWOD) Assisted Droplet Desiccation	Collin	Burkhart
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48498	Electrowetting on Dielectric (EWOD) Assisted Droplet Desiccation	Peter D.	Dunning
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	8-2-2	Biomicro II	InterPACKICN-MM2015-48498	Electrowetting on Dielectric (EWOD) Assisted Droplet Desiccation	Michael	Schertzer

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48192	Evaluating the Efficacy of Hollow Fiber Pre-Concentrator for Water Quality Monitoring	Saumyadeb	Dasgupta
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48192	Evaluating the Efficacy of Hollow Fiber Pre-Concentrator for Water Quality Monitoring	Naga Siva	Gunda
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48413	Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts	Arzu	Ozbey
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48413	Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts	Sarp	Akgönül
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48413	Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts	Zaliha Alk?m	Av?ar
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48413	Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts	Merve	Züvin
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48413	Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts	Özlem	Oral
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48413	Inertial Microfluidics for Size Based Focusing of Tumor Cells and Fibroblasts	Devrim	Gozuacik
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48452	Dielectrophoretic Capture of Circulating Tumor Cells from Physiological Buffers	ShiHong	Ma
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48452	Dielectrophoretic Capture of Circulating Tumor Cells from Physiological Buffers	David A.	Willis
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48452	Dielectrophoretic Capture of Circulating Tumor Cells from Physiological Buffers	Ganesh	Raj
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48452	Dielectrophoretic Capture of Circulating Tumor Cells from Physiological Buffers	Reny	Fernandez
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	Ashok	Baniya
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	Christopher	Kevil
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	John D	Glawe
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	Davis	Bailey
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	Debbie	Wood
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	suvhashis	thapa
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	Prabhu	Arumugam
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48491	Lab-on-a-Chip Device for Hydrogen Sulfide Sensing in Biomedical and Environmental Application Using Electrochemical Approach	Gaurab	dutta

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48494	Impedimetric Feedback in Particle Laden Digital Microfluidic Devices	Emrys	Scott-Murrell
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	8-2-3	Biomicro III	InterPACKICN-MM2015-48494	Impedimetric Feedback in Particle Laden Digital Microfluidic Devices	David	Lanza
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48296	Removal of shape deformation in the free energy based LBM for large density ratio adopted in the PEFC simulation	Jiaming	Gong
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48296	Removal of shape deformation in the free energy based LBM for large density ratio adopted in the PEFC simulation	Nobuyuki	Oshima
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48296	Removal of shape deformation in the free energy based LBM for large density ratio adopted in the PEFC simulation	Yutaka	Tabe
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48345	The Development and Characterization of a Microfluidic Battery	Hamid	Falahati
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48345	The Development and Characterization of a Microfluidic Battery	Edward	Kim
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48345	The Development and Characterization of a Microfluidic Battery	Alisha	Giglio
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48527	An Updated Two-Phase Flow Regime Map in Active PEM Fuel Cells Based on a Force Balance Approach	Lifeng	Zhang
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48527	An Updated Two-Phase Flow Regime Map in Active PEM Fuel Cells Based on a Force Balance Approach	Ryan	Anderson
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48545	Microscale Physics of Fabric Dewatering Subjected to High Frequency Ultrasonic Waves	Deepu	Prabhakaran
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48545	Microscale Physics of Fabric Dewatering Subjected to High Frequency Ultrasonic Waves	Ayyoub	Momen
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48833	Performance Characterization of a Capacitive Deionization Water Desalination System With an Intermediate Solution and Low Salinity Water	Seyedehyasamin	Salamat
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-1-1	Applications in Fuel Cells, Battery and Water Systems	InterPACKICN-MM2015-48833	Performance Characterization of a Capacitive Deionization Water Desalination System With an Intermediate Solution and Low Salinity Water	Carlos	Rios Perez
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48035	Experimental investigation of Fischer-Tropsch synthesis in a microchannel reactor	Xiang	Ying
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48035	Experimental investigation of Fischer-Tropsch synthesis in a microchannel reactor	Hongwei	Zhu
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48035	Experimental investigation of Fischer-Tropsch synthesis in a microchannel reactor	Jun	Cao
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48631	Effect of microchannel geometric structure on hydrogen production performance in methanol steam reformer	Feng	Yao
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48631	Effect of microchannel geometric structure on hydrogen production performance in methanol steam reformer	Xiangyong	Huang
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48631	Effect of microchannel geometric structure on hydrogen production performance in methanol steam reformer	Yongping	Chen
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48730	Hydrogel micro-system with multiple bacteria to enhance ammonia removal process	Jun	Kameoka

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Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48730	Hydrogel micro-system with multiple bacteria to enhance ammonia removal process	Kung-Hui	Chu
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48730	Hydrogel micro-system with multiple bacteria to enhance ammonia removal process	S A P L	Samarasinghe
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48767	Formation Characteristics of Bio-Coke Produced From Waste Agricultural Biomass	Satoru	Mizuno
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48767	Formation Characteristics of Bio-Coke Produced From Waste Agricultural Biomass	Tamio	Ida
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48767	Formation Characteristics of Bio-Coke Produced From Waste Agricultural Biomass	Manabu	Fuchihata
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48767	Formation Characteristics of Bio-Coke Produced From Waste Agricultural Biomass	Edmundo	Sanchez
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48767	Formation Characteristics of Bio-Coke Produced From Waste Agricultural Biomass	Koji	Yoshikuni
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48416	Two-Phase Flow and Mass Transfer in Helical Capillary Flow Reactors with Alternating Bends	Safa Kutup	Kurt
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	07:45 AM - 09:15 AM	8-4-1	Mixing, MT + CR I	InterPACKICN-MM2015-48416	Two-Phase Flow and Mass Transfer in Helical Capillary Flow Reactors with Alternating Bends	KDP	Nigam
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48095	Application of Microchannel Condensers for Small Scale Kalina Waste Heat Recovery Systems	Brian M.	Fronk
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48095	Application of Microchannel Condensers for Small Scale Kalina Waste Heat Recovery Systems	Kyle R.	Zada
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48225	Absorption Characteristics of Multilayered Thin Lithium Bromide (LiBr) Solution Film	Rasool	Nasr Isfahani
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48233	High Flux Microscale Solar Thermal Receiver for Supercritical Carbon Dioxide Cycles	Thomas	L'Estrange
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48233	High Flux Microscale Solar Thermal Receiver for Supercritical Carbon Dioxide Cycles	Eric	Truong
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48233	High Flux Microscale Solar Thermal Receiver for Supercritical Carbon Dioxide Cycles	Charles	Rymal
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48233	High Flux Microscale Solar Thermal Receiver for Supercritical Carbon Dioxide Cycles	Sourabh	Apte
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48233	High Flux Microscale Solar Thermal Receiver for Supercritical Carbon Dioxide Cycles	Kevin	Drost
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48816	A Hybrid Absorption Cycle for Water Heating, Dehumidification, and Evaporative Cooling	Devesh	Chugh
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48816	A Hybrid Absorption Cycle for Water Heating, Dehumidification, and Evaporative Cooling	Kyle	Gluesenkamp
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48816	A Hybrid Absorption Cycle for Water Heating, Dehumidification, and Evaporative Cooling	Omar	Abdelaziz
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48822	A Computational and Experimental Study of Metal and Covalent Organic Frameworks Used in Adsorption Cooling	Jeromy	Jenks

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48822	A Computational and Experimental Study of Metal and Covalent Organic Frameworks Used in Adsorption Cooling	Ward	Tegrotenhuis
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48822	A Computational and Experimental Study of Metal and Covalent Organic Frameworks Used in Adsorption Cooling	Radha	Motkuri
Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	Thursday, July 09, 2015	09:30 AM - 11:00 AM	8-1-2	Applications in Other Energy Systems	InterPACKICN-MM2015-48822	A Computational and Experimental Study of Metal and Covalent Organic Frameworks Used in Adsorption Cooling	Pete	McGrail
Technology Update Talks	Monday, July 06, 2015	03:30 PM - 05:00 PM	10-1-11	Data Center - Thermal management	InterPACKICN-MM2015-48901	Indirect Evaporative Air Side Economizers for Data Center Cooling	Philip	LePoudre
Technology Update Talks	Monday, July 06, 2015	05:30 PM - 07:00 PM	10-1-10	Thermal, Thermo-mechanical challenges in Packaging of Semiconductor Lasers	InterPACKICN-MM2015-48705	Applications and Thermal Challenges for Quantum Cascade Lasers	Manijeh	Razeghi
Technology Update Talks	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	10-1-3	Scalable and Integrated Nanotechnology	InterPACKICN-MM2015-48848	Nanotechnology: Development of Practical Systems and Nano-Micro-Macro Integration	Meyya	Meyyappan
Technology Update Talks	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	10-1-3	Scalable and Integrated Nanotechnology	InterPACKICN-MM2015-48849	Nano to Macro: Opportunities and Challenges in Scalable Integration	Liwei	Lin
Technology Update Talks	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	10-1-5	Tech talk on Energy, Health and Water- Applications of Nano-, Micro- and Mini-Scale Devices	InterPACKICN-MM2015-48860	Ultrathin silicon-based nanomembranes can revolutionize biological separations and serve as advanced cell culture platforms	Thomas	Gaborski
Technology Update Talks	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	10-1-8	Microfluidic Enabling Technology for Material Synthesis and Cell Assays	InterPACKICN-MM2015-48846	Microfluidic self assembly	Patrick	TABELING
Technology Update Talks	Tuesday, July 07, 2015	04:45 PM - 06:45 PM	10-1-1	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48135	Percolation Doping and Copercolating Transport in Graphene and CNT Networks	Muhammad	Alam
Technology Update Talks	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	10-1-8	Microfluidic Enabling Technology for Material Synthesis and Cell Assays	InterPACKICN-MM2015-48847	Micro-Structuring for Cell-Based Applications	Dirk	Janasek
Technology Update Talks	Tuesday, July 07, 2015	04:45 PM - 06:45 PM	10-1-1	Low Dimensional Materials Characterization & Applications	InterPACKICN-MM2015-48866	Thermoelectric power factor in low-dimensional systems	Heiner	Linke
Technology Update Talks	Wednesday, July 08, 2015	07:45 AM - 09:15 AM	10-1-2	Power Electronics and Electric Machines	InterPACKICN-MM2015-48703	Recent Advances in Automotive Power Electronics and Electric Machines at ORNL	Burak	Ozpineci
Technology Update Talks	Thursday, July 09, 2015	09:30 AM - 11:00 AM	10-1-6	Tuning Transport Phenomena Through Nanoscale Interfacial Engineering	InterPACKICN-MM2015-48861	Manufacturing of Carbon Nanotube Microstructures for Interfacial Engineering	A John	Hart
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Martin	Kuball
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	James	Pomeroy
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Julian	Anaya Calvo
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Huarui	Sun
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Roland B	Simon
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Stefano	Rossi
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Mohammed	Alomari

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Erhard	Kohn
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Lajos	Toth
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48145	Novel Thermal Management of GaN Electronics: Diamond Substrates	Bela	Pecz
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48694	Near Junction Transport and the Limits of Electronics Cooling	Damena D.	Agonafer
Technology Update Talks	Thursday, July 09, 2015	01:00 PM - 02:30 PM	10-1-9	Thermal Challenges in Recent Advancements in GaN Electronics	InterPACKICN-MM2015-48694	Near Junction Transport and the Limits of Electronics Cooling	Michael	Barako
Mini Workshops, Student Poster Competition and Tutorials	Monday, July 06, 2015	03:00 PM - 07:30 PM	11-4-2	Tutorials: Two Phase Boiling Computational Modelling Challenges	InterPACKICN-MM2015-48856	Implicit Interface Capturing Strategies in Simulation Efforts	Mario F	Trujillo
Mini Workshops, Student Poster Competition and Tutorials	Monday, July 06, 2015	03:00 PM - 07:30 PM	11-4-1	Tutorials: Reliability Challenges in Microelectronics Packaging	InterPACKICN-MM2015-48853	Designing in Reliability of Complex Electronic Devices: System Level Impact of Multi-physics Interaction	Krishna	Darbha
Mini Workshops, Student Poster Competition and Tutorials	Monday, July 06, 2015	03:00 PM - 07:30 PM	11-4-1	Tutorials: Reliability Challenges in Microelectronics Packaging	InterPACKICN-MM2015-48854	Changing Role of Mechanics in Electronic Packaging World: Opportunities & Challenges	Sandeep	Sane
Mini Workshops, Student Poster Competition and Tutorials	Tuesday, July 07, 2015	04:45 PM - 06:45 PM	11-4-4	Tutorial: Thermal Management of LED Devices and Systems	InterPACKICN-MM2015-48897	Thermal Management of LED Devices and Systems	Karl	Geisler
Mini Workshops, Student Poster Competition and Tutorials	Tuesday, July 07, 2015	04:45 PM - 06:45 PM	11-4-3	Tutorials: Thermofluid Characteristics of High Vapor Fraction Microgap Flow in Embedded Cooling Configurations	InterPACKICN-MM2015-48899	Thermofluid Characteristics of High Vapor Fraction Microgap Flow	Amir	Riaz
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48697	Integration Of Fault Detection And Classification In Die Singulation Processes For Advanced Packaging Fabrication	Richard	Beaver
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48749	Singulation by Plasma Etching: Integration Techniques to Enable Low Damage, High Productivity Dicing	Richard	Barnett
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48749	Singulation by Plasma Etching: Integration Techniques to Enable Low Damage, High Productivity Dicing	David J	Thomas
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48749	Singulation by Plasma Etching: Integration Techniques to Enable Low Damage, High Productivity Dicing	Oliver	Ansell
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48686	Thermal Stress Analysis of Mounted Substrate Using Glass Interposer	Yuto	KUBOTA
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48686	Thermal Stress Analysis of Mounted Substrate Using Glass Interposer	Ikuo	Shohji
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48686	Thermal Stress Analysis of Mounted Substrate Using Glass Interposer	Tetsuyuki	Tsuchida
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48686	Thermal Stress Analysis of Mounted Substrate Using Glass Interposer	Kiyotomo	Nakamura
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48761	Advanced Build-up Materials and Processes for Packages with Fine Line and Space	Kazuhiko	Tsurui
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48761	Advanced Build-up Materials and Processes for Packages with Fine Line and Space	Seiichiro	Ohashi
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48761	Advanced Build-up Materials and Processes for Packages with Fine Line and Space	Yoshio	Nishimura
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48761	Advanced Build-up Materials and Processes for Packages with Fine Line and Space	Hirohisa	Narahashi
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48761	Advanced Build-up Materials and Processes for Packages with Fine Line and Space	Shigeo	Nakamura

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48761	Advanced Build-up Materials and Processes for Packages with Fine Line and Space	Tadahiko	Yokota
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Yukio	Nakamura
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Kenichi	Oohashi
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Koji	Morita
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Shuji	Nomoto
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Takayuki	Suzuki
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Shin	Takanezawa
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Shinji	Tsuchikawa
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	07:45 AM - 09:15 AM	14-1-1	Wafer Dicing, Organic Substrates and Glass Interposers	InterPACKICN-MM2015-48836	New Super-Low Cte (0.7 Ppm/K) Core Material for Next Generation Thin Csp	Masaaki	Takekoshi
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48638	Fuming Acid Based Decapsulation Process for Copper-Aluminum Wirebond System Molded With Different EMCs	Shantanu	Deshpande
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48389	A Study on the Evolution of the High Strain Rate Mechanical Properties of SAC105 Leadfree Alloy at High Operating Temperatures	Vikas	Yadav
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48389	A Study on the Evolution of the High Strain Rate Mechanical Properties of SAC105 Leadfree Alloy at High Operating Temperatures	David	Locker
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48675	Corrosion Behavior of SUS304 Brazed Joint with Fe-based Filler Alternative to Ni-based Filler	Takahiro	Tsunoda
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48675	Corrosion Behavior of SUS304 Brazed Joint with Fe-based Filler Alternative to Ni-based Filler	Kotaro	Matsu
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48675	Corrosion Behavior of SUS304 Brazed Joint with Fe-based Filler Alternative to Ni-based Filler	Kangdao	Shi
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48675	Corrosion Behavior of SUS304 Brazed Joint with Fe-based Filler Alternative to Ni-based Filler	Yasuhiro	Taguchi
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48676	Tensile Properties and Microstructures of High Temperature Bi-based Lead-free Solder	Zhang	Haidong
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48676	Tensile Properties and Microstructures of High Temperature Bi-based Lead-free Solder	Masayoshi	Shimoda
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48676	Tensile Properties and Microstructures of High Temperature Bi-based Lead-free Solder	Hirohiko	Watanabe
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	09:30 AM - 11:00 AM	14-2-1	Interconect Solder Material Properties I	InterPACKICN-MM2015-48677	Fatigue Properties and Fatigue Crack Propagation behavior of low-Ag lead-free Sn-1.0Ag-0.7Cu-1.6Bi-0.2In solder	Yuki	TAKAHASHI
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48624	Characterization of Doped SAC Solder Materials and Determination of Anand Parameters	Sudan	Ahmed
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48708	Mechanical Constitutive Properties of Two High-Temperature Lead-Rich Solders	Qian	Jiang
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48708	Mechanical Constitutive Properties of Two High-Temperature Lead-Rich Solders	Subhasis	Mukherjee

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48708	Mechanical Constitutive Properties of Two High-Temperature Lead-Rich Solders	Bastian	Vogt
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48708	Mechanical Constitutive Properties of Two High-Temperature Lead-Rich Solders	David	Shaddock
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48708	Mechanical Constitutive Properties of Two High-Temperature Lead-Rich Solders	Liang	Yin
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48710	Mechanistic Modeling of the Anisotropic Steady State Creep Response of SnAgCu Single Crystal Joints	Thomas R.	Bieler
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48710	Mechanistic Modeling of the Anisotropic Steady State Creep Response of SnAgCu Single Crystal Joints	Bite	Zhou
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	01:00 PM - 02:30 PM	14-2-2	Interconnect Solder Material Properties II	InterPACKICN-MM2015-48792	Aging Induced Evolution of the Cyclic Stress-Strain Behavior of Lead Free Solders	Nianjun	Fu
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48622	Experimental Characterization of Underfill Materials Exposed to Moisture Including Preconditioning	Promod	Chowdhury
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48622	Experimental Characterization of Underfill Materials Exposed to Moisture Including Preconditioning	Nusrat	Chhanda
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48683	Underfill Design Using FEM for FC-BGA, FC-CSP, and Moving Towards 2.5&3D	Brian	Schmaltz
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48738	Pre-Applied Inter Chip Fill for 3D-IC Chip Joining	Yasuhiro	Kawase
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48738	Pre-Applied Inter Chip Fill for 3D-IC Chip Joining	Makoto	Ikemoto
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48738	Pre-Applied Inter Chip Fill for 3D-IC Chip Joining	Hidehiro	Yamamoto
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48738	Pre-Applied Inter Chip Fill for 3D-IC Chip Joining	Masaya	Sugiyama
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48738	Pre-Applied Inter Chip Fill for 3D-IC Chip Joining	Hideki	Kiritani
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48803	Next Generation NCP Enables Advanced Flip-Chip Packaging	Rose	Guino
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48803	Next Generation NCP Enables Advanced Flip-Chip Packaging	Jie	Cao
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48803	Next Generation NCP Enables Advanced Flip-Chip Packaging	Ruihua	Li
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48803	Next Generation NCP Enables Advanced Flip-Chip Packaging	Gina	Hoang
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48741	Effects of Low CTE Materials on Thermal Deformation of Organic Substrates in Flip Chip Package Application	Hiroyuki	Mori
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48741	Effects of Low CTE Materials on Thermal Deformation of Organic Substrates in Flip Chip Package Application	Keishi	Okamoto
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48741	Effects of Low CTE Materials on Thermal Deformation of Organic Substrates in Flip Chip Package Application	Hirokazu	Noma
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	02:45 PM - 04:15 PM	14-3-1	Underfills and CTE Effects	InterPACKICN-MM2015-48741	Effects of Low CTE Materials on Thermal Deformation of Organic Substrates in Flip Chip Package Application	Kazushige	Toriyama
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48166	Adhesion Strength Characterization for Drop Impact Reliability	Namseo	Goo
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48166	Adhesion Strength Characterization for Drop Impact Reliability	Ngoc San	Ha

TRACK NAME	DAY	TIME	SESSION NUMBER	SESSION TITLE	PAPER NUMBER	PAPER TITLE	AUTHOR FIRST NAME	AUTHOR LAST NAME
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48166	Adhesion Strength Characterization for Drop Impact Reliability	Thanh Duc	Dao
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48166	Adhesion Strength Characterization for Drop Impact Reliability	Jae	Kwak
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48166	Adhesion Strength Characterization for Drop Impact Reliability	Soonwan	Chung
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48712	Effect of Temperature Cycling and High Temperature Aging on the Elastic Properties and Failure Modes of Thermal Interface Materials	Taryn	Davis
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48712	Effect of Temperature Cycling and High Temperature Aging on the Elastic Properties and Failure Modes of Thermal Interface Materials	Tuhin	Sinha
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48712	Effect of Temperature Cycling and High Temperature Aging on the Elastic Properties and Failure Modes of Thermal Interface Materials	Kenneth	Marston
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48712	Effect of Temperature Cycling and High Temperature Aging on the Elastic Properties and Failure Modes of Thermal Interface Materials	Sushumna	Iruvanti
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48786	Temperature Induced Bond Healing Thermoplastic TIM	Sean	Orzolek
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48786	Temperature Induced Bond Healing Thermoplastic TIM	Jason L.	Strader
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48786	Temperature Induced Bond Healing Thermoplastic TIM	Richard F.	Hill Ph.D
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48517	Thermomechanical Reliability of Sintered-Silver Interface Materials	Paul	Paret
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48447	A Compliance-Based Approach to Study Fatigue Crack Propagation for a Copper-Epoxy Interface	David	Samet
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48447	A Compliance-Based Approach to Study Fatigue Crack Propagation for a Copper-Epoxy Interface	Abhishek	Kwatra
Advanced Electronics and Photonics, Packaging Materials and Processing	Tuesday, July 07, 2015	04:45 PM - 06:15 PM	14-3-2	Thermal Interface Materials and Adhesives	InterPACKICN-MM2015-48447	A Compliance-Based Approach to Study Fatigue Crack Propagation for a Copper-Epoxy Interface	Suresh	Sitaraman
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48623	Characterization of the Effects of Silver Content on the Aging Resistance of SAC Solder Joints	Md	Hasnine
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48623	Characterization of the Effects of Silver Content on the Aging Resistance of SAC Solder Joints	Barton	Prorok
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48653	An Inverse Procedure for Estimating the Anand Viscoplastic Constitutive Model Parameters for Copper Free-Air Ball	Sai Sudharsanan	Paranjothy
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48653	An Inverse Procedure for Estimating the Anand Viscoplastic Constitutive Model Parameters for Copper Free-Air Ball	Dae Young	Jung
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48727	DIC Based Investigation Into the Effect of Mean Temperature of the Thermal Cycle on the Strain State in SnAgCu Solder Joint	Kazi	Mirza
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48785	LED Chip Deformation Measurement During the Operation Using the X-Ray CT Digital Volume Correlation	Junchao	Wei
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48594	Design of Next Generation Antenna Mounts	rubengregory	puthotadominicsav-io
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48594	Design of Next Generation Antenna Mounts	Al	Skrepcinski
Advanced Electronics and Photonics, Packaging Materials and Processing	Wednesday, July 08, 2015	04:45 PM - 06:15 PM	14-5-1	Novel Modeling, Test and Characterization Methods	InterPACKICN-MM2015-48594	Design of Next Generation Antenna Mounts	Tom	Palmer

IAB Chair: Ravi Mahajan, Intel

Micro-electronics packaging is a critical bridge providing reliable, high performance interconnections critical to enabling silicon performance and scaling. Today, micro-electronics packaging is a significant and complex field requiring close collaboration between the multiple disciplines in Mechanical, Electrical and Materials engineering. Packaging is the common enabler in diverse systems ranging from servers to hand-helds and wearables providing connectivity in different form factors while meeting demanding technical and economic constraints. The field continues to have a vibrant and healthy interaction between academia and industry and continues to attract the best and brightest new talent. Looking forward, technical and economic challenges in micro-electronic packaging are expected to continue to provide exciting new challenges as silicon scaling brings increasing value in enhancing the quality of life.

InterPACK is an important conference that brings together academia and industry to debate current issues and strategies while fostering new talent to address the needs of the future. We are very pleased also to have the oversight and mentoring of a strong and active Industrial Advisory Board. It has been a particular strength of InterPACK that senior leaders from industry and academia take the time to review conference strategies, provide strategic direction and sponsor the very popular student poster competition. I would like to take this opportunity to thank industry leaders from Intel, IBM, Finnegan, Henderson, Farabow, Garrett & Dunner, GE, Microsoft, and Anveshak who provide valuable guidance in the development of InterPACK'11. The IAB is also constituted of senior representatives from academia including S3IP and SUNY Binghamton to provide balance and constructive debate. I would particularly like to thank Finnegan, Henderson, Farabow, Garrett & Dunner, S3IP and Intel for their generous financial contributions that have made the student poster competition possible. This commitment reflects the conviction of the industrial community on the importance of the field, the need to attract new talent and most importantly the confidence that together academia and industry can forge an effective partnership to solve the problems of the future.

Track 1: Advanced Electronics and Photonics: Packaging, Interconnect and Reliability

Track Organizer: Ashish Gupta, Intel Corporation

Co-Organizer: Abhijit Dasgupta, CALCE/University of Maryland and Toru Ikeda, Kagoshima University

Track 2: Emerging Technology Frontiers

Track Organizer: Samuel Graham, Georgia Tech

Co-Organizer: Hendrik PJ De Bock, GE Global Research

Track 3: MEMS and NEMS

Track Organizer: Debbie G. Senesky, Stanford University

Co-Organizers: Ahsan Mian, Wright State University, Carl Arft, SiTime Corporation and Igor Bargatin, University of Pennsylvania

Track 4: Thermal Management

Track Organizer: Madhusudan Iyengar, Google

Co-Organizers: Karl Geisler, 3M and Masaru Ishizuka, Toyama Prefectural University

Track 5: Thermal Management Using Micro Channels, Jets, Sprays

Track Organizer: Thomas Brunschwiler, IBM Research-Zurich

Co-Organizers: Mark Steinke, Lenovo, Michael Ohadi, University of Maryland and Satish Kandlikar, RIT

Track 6: Fundamentals of Thermal and Fluid Transport in Nano, Micro, and Mini Scales

Track Organizer: Evelyn N. Wang, MIT

Co-Organizers: Daniel Attinger, Iowa State University, Masahiro Kawaji, City College of New York, Shalabh Maroo, Syracuse University, and Sushanta Mitra, York University

Track 7: Advanced Fabrication and Manufacturing

Track Organizer: Yoav Peles, University of Central Florida

Co-Organizers: Matthew McCarthy, Drexel University and Michael Ohadi, University of Maryland

Track 8: Energy, Health and Water-Applications of Nano-, Micro- and Mini-Scale Devices

Track Organizer: Norbert Kockmann, TU Dortmund University

Co-Organizer: Saeed Moghaddam, University of Florida

Track 9: Panels

Track Organizer: Victor Chiriac, Qualcomm Inc.

Co-Organizers: Jan Vardaman, TechSearch International, Inc. and Sushil Bhavnani, Auburn University

Track 10: Technology Update Talks

Track Organizer: Kaustubh Nagarkar, GE Global Research Center

Co-Organizer: Norbert Kockmann, TU Dortmund University

Track 11: Mini Workshops, Student Poster Competition and Tutorials

Track Organizer: Sandeep Tonapi, Anveshak Technology and Knowledge Solutions

Co-Organizer: Adam Donaldson, University of Dalhousie

Track 12: Student Poster and Networking Session

Track Organizer: Banafsheh Barabadi, MIT

Co-Organizers: Amy Betz, Kansas State University, Jaeho Lee, University of California, Irvine and Milnes David, IBM

Track 13: Exhibits, Vendors, and Sponsors

Track Organizer: Medhi Asheghi, Stanford University

Track 14: Advanced Electronics and Photonics, Packaging Materials and Processing

Track Organizer: Kamal Sikka, IBM

Co-Organizers: Hideo Miura, Tohoku University, Jiantao Zheng, Qualcomm, Pradeep Lall, Auburn University, Virendra Jadhav, Microsoft

Track
ADVANCED ELECTRONICS AND PHOTONICS: PACKAGING, INTERCONNECT AND RELIABILITY
Topic

1-1 Advances in Packaging

Name	Company	Role
Arun Gowda	GE Global Research	Topic Organizer
Takahiro Kinoshita	Toyama Prefectural Univ	Topic Co-Organizer
Upendra Sheth	Intel Corporation	Topic Co-Organizer
Yong Liu	Fairchild Semiconductor, USA	Topic Co-Organizer

1-2 Advances in 2.5D, 3D and Stacked Packaging

Name	Company	Role
Debendra Mallik	Intel Corporation	Topic Organizer
Herb Reiter	eda 2 asic Consulting, Inc	Topic Co-Organizer
Keiji Matsumoto	IBM Research-Tokyo	Topic Co-Organizer
Niru Kumari	Hewlett-Packard	Topic Co-Organizer

1-3 Advances in Interconnect Technologies

Name	Company	Role
Xiao Hu Liu	IBM TJ Watson Research Center	Topic Organizer
Dhruv Bhate	Intel Corporation	Topic Co-Organizer
Gayatri Cuddalorepatta	Harvard University	Topic Co-Organizer
Kazuhiko Sasagawa	Hirosaki University	Topic Co-Organizer

1-4 Flexible and Wearable Electronics

Name	Company	Role
Mehdi Saeidi	Qualcomm	Topic Organizer
Angel Qian Han	Huawei USA	Topic Co-Organizer
Bradley Urban	Amazon Lab 126	Topic Co-Organizer

1-5 Silicon Photonics and LED

Name	Company	Role
Sanka Ganesan	Intel Corporation	Topic Organizer
Zhihua Li	Amazon	Topic Co-Organizer

1-6 Harsh Environments and High Temperature electronics

Name	Company	Role
Patrick McCluskey	University of Maryland	Topic Organizer
Milena Vujosevic	Intel Corporation	Topic Co-Organizer
Toshihiko Sayama	Toyama Industrial Technology Center	Topic Co-Organizer
Yuxun Zhou	Microsoft	Topic Co-Organizer

1-7 Energy Storage and Harvesting (Battery, Thermoelectrics, Solar, ultra caps etc)

Name	Company	Role
Rahul Panat	Washington State University	Topic Organizer
Nachiket Raravikar	Intel Corporation	Topic Co-Organizer

EMERGING TECHNOLOGY FRONTIERS
Topic

2-1 Thermal Management: Mobile Applications

Name	Company	Role
Victor Chiriac	Qualcomm Inc	Topic Organizer
Don Le	Qualcomm	Topic Co-Organizer
Tannaz Harirchian	Intel Corporation	Topic Co-Organizer

2-2 Thermal Management: LED

Name	Company	Role
Mehmet Arik	Ozyegin Univ	Topic Organizer
Kashif Nawaz	JCI	Topic Co-Organizer
Xiaobing Luo	Huazhong University of Sci. & Tec.	Topic Co-Organizer

2-3 Near Junction Thermal Transport In Electronic Devices

Name	Company	Role
Yogendra Joshi	Georgia Institute of Technology	Topic Organizer
David Altman	Raytheon Integrated Defense Systems	Topic Co-Organizer

2-4 Power Electronics and Electric Machines

Name	Company	Role
Sreekant Narumanchi	National Renewable Energy Laboratory	Topic Organizer
Juan Rivas	Stanford University	Topic Co-Organizer
Keisuke Horiuchi	Hitachi Ltd	Topic Co-Organizer

2-5 Nanoscale Heat Transport And Characterization Methods

Name	Company	Role
Patrick Hopkins	University of Virginia	Topic Organizer
Chris Dames	UC Berkeley	Topic Co-Organizer
Junichiro Shiomi	University of Tokyo	Topic Co-Organizer

2-7 2D Materials, Graphene & CNT Thermal Characterization & Applications

Name	Company	Role
Satish Kumar	Georgia Institute Of Technology	Topic Organizer
Amy Marconnet	Purdue University	Topic Co-Organizer

MEMS AND NEMS
Topic

3-1 N/MEMS: Sensors, Actuators, & Resonators

Name	Company	Role
Songbin Gong	University of Illinois at Urbana Champaign	Topic Organizer
Matteo Rinaldi	Northeastern University	Topic Co-Organizer
Mina Rais-Zadeh	University of Michigan	Topic Co-Organizer

3-2 N/MEMS: Energy Harvesting & Storage

Name	Company	Role
Dan Steingart	Princeton University	Topic Organizer
Eri Takahashi	EcoHarvester	Topic Co-Organizer

3-3 N/MEMS: Fabrication, Integration, Packaging, Test & Reliability

Name	Company	Role
Joseph Doll	SiTime Corporation	Topic Organizer
Babak Jamshidi	STATS ChipPAC	Topic Co-Organizer
David Garmire	University of Hawaii	Topic Co-Organizer
Maarten Vraanes	MEMS Journal	Topic Co-Organizer

3-4 N/MEMS: Emerging Technology

Name	Company	Role
Inkyu Park	KAIST	Topic Organizer
Igor Paprotny	University of Illinois	Topic Co-Organizer
Meg Mude	3rd Eye Consulting Services	Topic Co-Organizer
Philip Feng	Case Western Reserve University	Topic Co-Organizer
Wonhee Lee	KAIST	Topic Co-Organizer
Xiaogan Liang	University of Michigan	Topic Co-Organizer

THERMAL MANAGEMENT

Topic

4-1 Data Centers and Energy Efficient Electronic Systems

Name	Company	Role
Dustin Demetriou	IBM	Topic Organizer
Nishi Ahuja	Intel Corporation	Topic Co-Organizer
Saurabh Shrivastava	Panduit	Topic Co-Organizer

4-2 Rack Level Thermal Management

Name	Company	Role
Milnes David	IBM	Topic Organizer
Shlomo Novotny	Consultant	Topic Co-Organizer
Takashi Fukue	Japan/Iwate University	Topic Co-Organizer
Vadim Gektin	Huawei	Topic Co-Organizer

4-3 Thermal Management: Thermal Interface Materials & Heat Spreading

Name	Company	Role
Jelena Culic-Viskota	Intel Corporation	Topic Organizer
Chandra Mohan (CM) Jha	Intel	Topic Co-Organizer
Parisa Foroughi	Dell	Topic Co-Organizer
Toshio Tomimura	Kumamoto University	Topic Co-Organizer

4-4 Thermal Management: Device Level Thermal Management

Name	Company	Role
Unni Vadakkanmaruveedu	Qualcomm	Topic Organizer
Kazuyoshi Fushinobu	Tokyo Institute of Technology	Topic Co-Organizer
Shakti Chauhan	GE	Topic Co-Organizer

4-5 Thermal Management: Stacked Die & Multi-Chip-Module and Packaging

Name	Company	Role
Ankur Jain	University of Texas at Arlington	Topic Organizer
Hemanth Dhavaleswarapu	Intel Corporation	Topic Co-Organizer
Koji Nishi	AMD Japan	Topic Co-Organizer
Pritish Parida	IBM	Topic Co-Organizer

4-6 Thermal Management: Thermoelectrics

Name	Company	Role
Kazuaki Yazawa	Purdue University	Topic Organizer
Koji Miyazaki	Kyushu Institute of Technology	Topic Co-Organizer
Peng Wang	Qualcomm	Topic Co-Organizer

4-8 Thermal Management: Phase Change Materials

Name	Company	Role
Ram Ranjan	UTRC	Topic Organizer
Amir Shooshtari	University of Maryland	Topic Co-Organizer
Fatemeh Hassanipour	University of Texas	Topic Co-Organizer
Shinji Nakagawa	Toyama Prefectural University	Topic Co-Organizer

4-9 Thermal Modeling Methodologies and Simulations

Name	Company	Role
Baris Dogruoz	Cisco	Topic Organizer
Reza Khiabani	Google	Topic Co-Organizer

4-10 Air Cooling: Heat Sink to System Level

Name	Company	Role
Krishna Kota	New Mexico State University	Topic Organizer
Ehsan Haghighi	Dantherm	Topic Co-Organizer
Sukhvinder Kang	Aavid Thermalloy	Topic Co-Organizer

4-11 Power-Performance-Reliability Co-design for ICs

Name	Company	Role
Arvind Sridhar	IBM	Topic Organizer
Ankur Srivastava	UMD	Topic Co-Organizer
Ayse Coskun	Boston University	Topic Co-Organizer

THERMAL MANAGEMENT USING MICRO CHANNELS, JETS, SPRAYS

Topic

5-1 Single phase cooling fundamentals

Name	Company	Role
David Copeland	Oracle	Topic Organizer
Poh-seng Lee	National University of Singapore	Topic Co-Organizer

5-2 Flow-boiling experimental investigations

Name	Company	Role
Masamichi Kohno	Kyushu University	Topic Organizer
Deborah V. Pence	Oregon State University	Topic Co-Organizer

5-3 Cold plate integration

Name	Company	Role
Mark North	Thermacore Inc	Topic Organizer
Ram Ranjan	UTRC	Topic Co-Organizer

5-4 Liquid and synthetic jets

Name	Company	Role
Sidy Ndao	University of Nebraska-Lincoln	Topic Organizer
Damena D. Agonafer	Stanford University	Topic Co-Organizer

5-5 Vapor chambers & condensation

Name	Company	Role
Yasuyuki Takata	Kyushu Univ	Topic Organizer
Justin A. Weibel	Purdue University	Topic Co-Organizer

5-6 Advanced and oscillating heat Pipes

Name	Company	Role
Vaibhav Bahadur	University of Texas at Austin	Topic Organizer
Tannaz Harirchian	Intel Corporation	Topic Co-Organizer

5-7 High heat flux hot spot cooling

Name	Company	Role
Melanie Derby	Kansas State University	Topic Organizer
Kazuhisa Yuki	Tokyo University of Science-Yamaguchi	Topic Co-Organizer

5-8 Embedded cooling for 3D ICs

Name	Company	Role
Pritish Parida	IBM	Topic Organizer
Navdeep Singh Dhillon	MIT	Topic Co-Organizer

5-9 Two Phase Boiling Computational Modeling Challenges

Name	Company	Role
John Thome	Ecole Polytechnique Federale de Lausanne	Topic Organizer
Kaiser Matin	System Planning Corporation	Topic Co-Organizer

FUNDAMENTALS OF THERMAL AND FLUID TRANSPORT IN NANO, MICRO, AND MINI SCALES

Topic

6-1 Single Phase Flows

Name	Company	Role
Heinz Herwig	Technical University Hamburg-Harburg (M-21)	Topic Organizer
Masahiro Motosuke	Tokyo University of Science	Topic Co-Organizer
Stephane Colin	University of Toulouse	Topic Co-Organizer
Tatiana Gambaryan-Roisman	Technische Universität Darmstadt	Topic Co-Organizer

6-2 Two Phase Flows

Name	Company	Role
Yuri Muzychka	Memorial Univ Of Newfoundland	Topic Organizer
Rishi Raj	Indian Institute of Technology Patna	Topic Co-Organizer
Rui Qiao	Virginia Tech	Topic Co-Organizer

6-3 Continuum/Atomistic Modeling and Simulations

Name	Company	Role
Mario F Trujillo	University of Wisconsin	Topic Organizer
Leandro Sphaier	Universidade Federal Fluminense	Topic Co-Organizer

6-4 Pool Boiling and Condensation

Name	Company	Role
Nenad Miljkovic	University of Illinois at Urbana-Champaign	Topic Organizer
Jonathan Boreyko	Virginia Tech	Topic Co-Organizer

6-5 Micro/Nano Structures in Phase Change Heat Transfer

Name	Company	Role
Matthew McCarthy	Drexel University	Topic Organizer
Amy Betz	Kansas State University	Topic Co-Organizer

6-6 Thin Film/Surface Tension Driven Flows

Name	Company	Role
Chen Li	University of South Carolina	Topic Organizer
Fanghao Yang	IBM	Topic Co-Organizer
Tatiana Gambaryan-Roisman	Technische Universität Darmstadt	Topic Co-Organizer
Youngsuk Nam	Kyung Hee University	Topic Co-Organizer

6-7 Electrokinetic Flows

Name	Company	Role
Dominik P.J. Barz	Queen's University	Topic Organizer
Cullen Buie	Massachusetts Institute of Technology	Topic Co-Organizer

ADVANCED FABRICATION AND MANUFACTURING

Topic

7-1 Novel Fabrication Methods for Micro- and Nano- scale Devices

Name	Company	Role
Rajiv Malhotra	Oregon State University	Topic Organizer
David A. Willis	SMU	Topic Co-Organizer

7-5 3D Additive Manufacturing

Name	Company	Role
TieJun Zhang	Masdar Institute of Science and Technology	Topic Organizer
Nicholas Fang	MIT	Topic Co-Organizer

ENERGY, HEALTH AND WATER- APPLICATIONS OF NANO-, MICRO- AND MINI-SCALE DEVICES

Topic

8-1 Fuel Cells & Other Energy Devices

Name	Company	Role
Dominik P.J. Barz	Queen's University	Topic Organizer
Ayyoub Momen	Oak Ridge National Laboratory	Topic Co-Organizer
Brian M. Fronk	Oregon State University	Topic Co-Organizer
Marc Secanell Gallart	Univ of Alberta	Topic Co-Organizer

8-2 Biomicrofluidics and Lab-on-a-chip

Name	Company	Role
Michael King	Cornell	Topic Organizer
Carolyn Ren	univ of Waterloo	Topic Co-Organizer
Jeff Darabi	Southern Illinois University Edwards-ville	Topic Co-Organizer
Michael Schrlau	Rochester Institute of Technology	Topic Co-Organizer
Sidy Ndao	University of Nebraska-Lincoln	Topic Co-Organizer

8-3 Transport in Membranes

Name	Company	Role
Shohji Tsushima	Tokyo Institute of Technology	Topic Organizer
Chuanhua Duan	Boston University	Topic Co-Organizer
Gisuk Hwang	Wichita State University	Topic Co-Organizer
Satish Kandlikar	RIT	Topic Co-Organizer

8-4 Mixing, Mass Transfer, and Chemical Reactions

Name	Company	Role
Chun Yang	Nanyang Technological Univ	Topic Organizer
Aram Chung	Rensselaer Polytechnic Institute	Topic Co-Organizer
Nam-Trung Nguyen	Queensland Micro and Nanotech-nology Centre	Topic Co-Organizer

MINI WORKSHOPS, STUDENT POSTER COMPETITION AND TUTORIALS

Topic

11-1 NSF - Graduate Student Career Path

Name	Company	Role
Amy Fleischer	Villanova University	Topic Organizer
Alfonso Ortega	Villanova University	Topic Co-Organizer

11-3 Workshop: ASME Journal of Electronics Packaging (JEP)

Name	Company	Role
Yung Cheng Lee	University Of Colorado	Topic Organizer
Mehdi Asheghi	Stanford University	Topic Co-Organizer

11-5 Student Poster Competition

Name	Company	Role
Banafsheh Barabadi	MIT	Topic Organizer
Amy Betz	Kansas State University	Topic Co-Organizer
Jaeho Lee	University of California, Irvine	Topic Co-Organizer
Milnes David	IBM	Topic Co-Organizer

ADVANCED ELECTRONICS AND PHOTONICS, PACKAGING MATERIALS AND PROCESSING

Topic

14-1 Wafer Dicing, Organic Substrates and Glass Interposers

Name	Company	Role
Tadaharu Adachi	Toyohashi University of Technology	Topic Organizer
FRANK WEI	DISCO Corporation	Topic Co-Organizer

14-2 Interconnects Materials

Name	Company	Role
Tomoyuki Yamada	Kyocera America Inc.	Topic Organizer
Pradeep Lall	Auburn University	Topic Co-Organizer

14-3 Overmold Compounds, Adhesives, Underfills, Seals, Thermal Interface and Heat Spreader Materials

Name	Company	Role
Hiroyuki Mori	IBM Japan, Ltd.	Topic Organizer
Marie-Claude Paquet	IBM Canada	Topic Co-Organizer
Taryn Davis	IBM	Topic Co-Organizer

14-5 Novel Modeling, Test and Characterization Methods

Name	Company	Role
Gerd Schlottig	IBM Zurich Research Laboratory	Topic Organizer
Fei Qin	Beijing University of Technology	Topic Co-Organizer

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Gamal Refai-Ahmed, Ph.D.

Life Fellow ASME, Fellow CAE

Distinguished Engineer

Packaging and System Technology and Development

Panels

Victor Chiriac, Qualcomm Inc.

Jan Vardaman, TechSearch International, Inc.

Sushil Bhavnani, Auburn University

Tutorials

Sandeep Tonapi, Anveshak Technology and Knowledge Solutions

Adam Donaldson, University of Dalhousie

Student Posters

Banafsheh Barabadi, MIT

Amy Betz, Kansas State University

Jaeho Lee, University of California, Irvine

Milnes David, IBM Corporation

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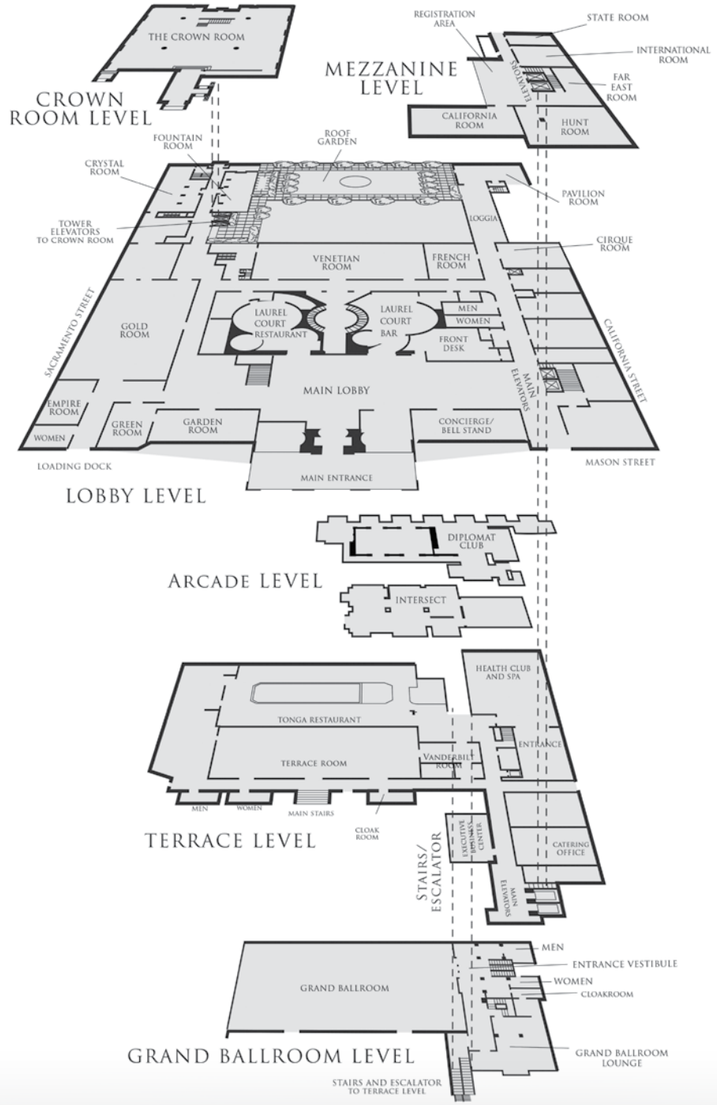

San Francisco is often called "Everybody's Favorite City," a title earned by its scenic beauty, cultural attractions, diverse communities, and world-class cuisine. Measuring 49 square miles, this very walk-able city is dotted with landmarks like the Golden Gate Bridge, cable cars, Alcatraz and the largest Chinatown in the United States. A stroll of the City's streets can lead to Union Square, the Italian-flavored North Beach, Fisherman's Wharf, the Castro, Japantown and the Mission District, with intriguing neighborhoods to explore at every turn.

Views of the Pacific Ocean and San Francisco Bay are often laced with fog, creating a romantic mood in this most European of American cities. The City has a colorful past, growing from a small village to a major city nearly overnight as a result of the 1849 Gold Rush. The writers of the "beat" generation, the hippies of the Summer of Love in the late 1960's and the large gay/lesbian population have all contributed to making San Francisco the fascinating place it is today.

The City is home to world-class theatre, opera, symphony and ballet companies and often boasts premieres of Broadway-bound plays and culture-changing performing arts. San Francisco is one of America's greatest dining cities. The diverse cultural influences, proximity of the freshest ingredients and competitive creativity of the chefs result in unforgettable dining experiences throughout the City. San Francisco has well over 32,000 hotel rooms on offer, from first-class hotels and ultra-chic boutique hotels to familiar names in lodging and budget friendly inns.

See You in 2017!

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