

PROGRAM OVERVIEW



ASME INTERPACK 2026

THE INTERNATIONAL TECHNICAL CONFERENCE ON
PACKAGING AND INTEGRATION OF ELECTRONIC AND
PHOTONIC MICROSYSTEMS



CONFERENCE: OCTOBER 26-29, 2026

SAN DIEGO MARRIOTT MISSION VALLEY
8757 RIO SAN DIEGO DR,
SAN DIEGO, CA 92108

<https://event.asme.org/InterPACK>

WI-FI INFORMATION

NETWORK: **MarriottBonvoy_CONFERENCE**
ACCESS CODE: **mmv2026**



InterPACK 2026

Dear Participants of InterPACK,

On behalf of the ASME Electronic and Photonic Packaging Division (EPPD) and the InterPACK 2026 organizing committee, it is with great pleasure that we welcome you to the 2026 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK). This year's conference will be held at the San Diego Marriott Mission Valley in San Diego, California, from October 26 to October 29, 2026.

InterPACK serves as a premier forum organized by ASME EPPD, with a rich history of facilitating the exchange of transformative research in electronic and photonic packaging, reliability, manufacturing, and thermal management of electronic devices, components, and systems. The conference brings together researchers, technical professionals, students, and leaders from academia, government, national laboratories, and industry to share advances, build connections, and identify opportunities for collaboration.

The organizing committee has assembled a comprehensive technical program designed to reflect the breadth and continued evolution of the field. Program topics span heterogeneous integration; data centers, modular edge systems, and information storage systems; electronic packaging for extreme environments; power/RF electronics and photonics; nanoscale heat transfer, multiscale thermal transport, and energy storage; flexible, wearable, and printed electronics; intelligent modeling, simulation, and automation systems; interactive presentations; micro/nano mechatronics, microelectronics, microelectrochemical systems, and Internet of Things applications; and panels, tutorials, and workshops. Together, these sessions are intended to foster technical exchange, strengthen professional networks, and support collaboration across disciplines and sectors.

We are delighted to feature plenary presentations from distinguished leaders whose work reflects the depth and impact of the InterPACK community, including Cristina Amon, Sam Graham, Bahgat Sammakia, Shintaro Itoh, Imran Latif, and Mark Shiflet. Their talks will address timely developments across battery thermal management and modeling, data-center thermal management in the age of artificial intelligence, nanoscale wetting phenomena, and other emerging areas shaping the future of electronic and photonic packaging.

We trust that you will find the program developed by our dedicated volunteers—including track chairs, session chairs, workshop organizers, tutorial instructors, panel moderators, technical paper reviewers, and committee members—to be engaging and informative. We extend our sincere appreciation to the volunteers, ASME staff, speakers, authors, sponsors, exhibitors, and attendees whose contributions make this conference possible.

Thank you for joining us at InterPACK 2026. We look forward to welcoming you to San Diego and to the technical exchange, collaboration, and community this conference continues to inspire.

Sincerely,

Damena Agonafer, Ph.D.
General Chair, InterPACK 2026
University of Maryland

General Information

About InterPACK 2026

InterPACK is the leading global forum for cutting-edge research, development, manufacturing, and applications in electronics packaging and heterogeneous integration.

As the flagship conference of the ASME Electronic and Photonic Packaging Division (EPPD), InterPACK brings together the full systems ecosystem — from advanced materials and thermal management to next-generation computing architectures and intelligent, connected devices. The program spans Heterogeneous Integration, Servers of the Future, Edge and Cloud Computing, Internet of Things, Additive and Printed Electronics, Flexible and Wearable Electronics, Photonics and Optics, Power Electronics, Energy Conversion and Storage, and Autonomous, Hybrid, and Electric Vehicles.

InterPACK's international community is one of its greatest strengths. The conference fosters meaningful collaboration among industry leaders, academic researchers, national laboratories, funding agencies, start-ups, and entrepreneurs. Alongside technical paper presentations and exhibits, InterPACK 2026 will feature panel discussions, workshops, tutorials, keynote and technology talks from distinguished experts, and a joint poster session uniting industry, national labs, and academia.

Registration Hours and Location

Day	Hours	Location
Monday, October 26	3:30 PM–5:30 PM	Rio Vista Salon Foyer
Tuesday, October 27	7:30 AM–5:15 PM	Rio Vista Salon Foyer
Wednesday, October 28	7:30 AM–5:15 PM	Rio Vista Salon Foyer
Thursday, October 29	7:30 AM–3:45 PM	Rio Vista Salon Foyer



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InterPACK 2026

BADGE REQUIRED FOR ADMISSION

A conference badge is required for admission to all conference events and must be worn at all times. Attendees who do not display their conference badge may be denied entry.

AUDIOVISUAL EQUIPMENT IN SESSION ROOMS

All technical session rooms are equipped with an LCD projector and screen. Laptops will not be provided in the session rooms.

Session chairs typically provide a laptop for presentations, or presenters may use their own laptop. Presenters using the session chair's laptop should bring their presentation on a USB flash drive and arrive 10–15 minutes before their scheduled presentation to upload and test the file.

VENUE AND TRAVEL INFORMATION

San Diego Marriott Mission Valley - 8757 Rio San Diego Dr, San Diego, CA 92108

The International Technical Conference on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) will be held October 26–29, 2026, at the San Diego Marriott Mission Valley, 8757 Rio San Diego Drive, San Diego, CA 92108, USA. The hotel offers modern meeting space, on-site dining, outdoor areas, and convenient access to the city's transit, beaches, and dining districts.

Program Space: Keynotes, technical sessions, and exhibits will be located on the hotel's meeting level. Floor plans and room assignments will be shared closer to the event.

EMERGENCY INFORMATION

For immediate help or emergency information at the San Diego Marriott Mission Valley, contact the hotel or the appropriate local emergency service.

Local Emergency Services

Emergency — Police, Fire, or Medical: Dial 911

San Diego Police Department — Non-Emergency: +1 619-531-2000

Poison Control Center: 1-800-222-1222



InterPACK 2026

Conference App and Schedule Updates

Download the ASME Conferences app:

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Internet Access

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InterPACK 2027

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AWARD LUNCHES

Tuesday, October 27 12:45 PM–2:00 PM

Rio Vista Salon D/E Avram Bar-Cohen Award

Recipient: Ali Heydari

Wednesday, October 28 12:45 PM–2:00 PM

Rio Vista Salon D/E

Allan Kraus Award

Recipient: Rajiv Mongia

Thursday, October 29 12:45 PM–2:00 PM

Rio Vista Salon D/E Nasser Grayeli Poster Award

EPPD and JEP Awards

BREAKS

Breaks are 15-minute, beverage-only periods..

Break AM: 11:00 AM–11:15 AM

Break PM: 3:30 PM–3:45 PM

Location: Rio Vista Salon Foyer

SPEAKER READY ROOM - BALBOA 1&2 | 7:30 - 3:45 PM (TUESDAY THROUGH THURSDAY)

Equipment: One screen, keyboard, and mouse for testing presentations

For AV concerns, visit the registration desk or knock on the door of Sierra 5/6.

HOTEL VENUE INFORMATION

Item	Information
Address	8757 Rio San Diego Drive, San Diego, CA 92108
Main phone	619-692-3800
Hotel website	https://www.marriott.com/en-us/hotels/sanmv-san-diego-marriott-mission-valley/overview/?scid=f2ae0541-1279-4f24-b197-a979c79310b0
Check-in / check-out	Check-in: 4:00 PM; check-out: 11:00 AM. Minimum age to check in: 21.
Parking	On-site parking is available. Hourly parking is \$5.00, and daily parking is \$39.00. Long-term parking is available. The garage height clearance is 6 feet 8 inches.
Dining and amenities	Smoke-free property. Building access: key card. Front desk available. Pets welcome; non-refundable pet fee of \$150.00 per stay. Maximum pet weight: 35 lbs.; maximum number of pets per room: 2. Contact hotel for more details.
Pool	Outdoor heated pool on property. Hours: Monday-Sunday, 6:00 AM-10:00 PM. Towels provided.



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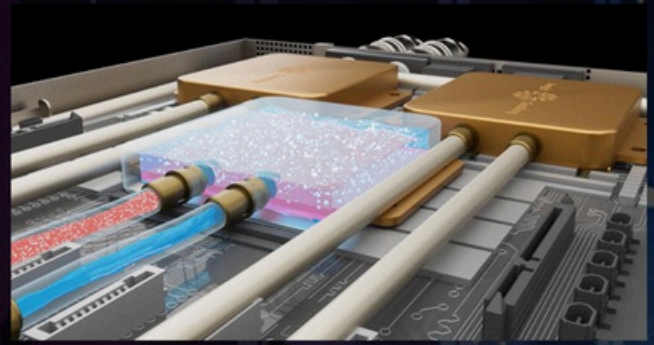
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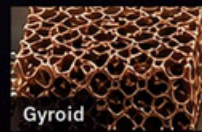


MI300

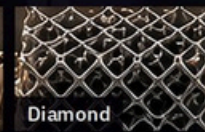


Sapphire Rapids

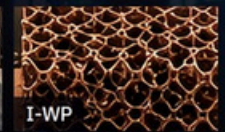
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COMMITTEE MEETINGS

Tuesday, October 27, 2026

5:15PM - 5:45PM | MIPE Meeting

7:00PM - 7:30PM | EPPD + JEP Meeting

7:30PM - 8:00 PM | K-16 Committee Meeting

Wednesday, October 28, 2026

6:45PM - 7:15PM | InterPACK Meeting (Closed - By invitation only)

7:15PM – 7:45PM | InterPACK Meeting (Open to the public)

All Meetings are in Balboa 1&2 on the ground level of the hotel next to registration.

Presenter Attendance Policy

Registration Requirement

For each Technical Publication, Technical Presentation, or Poster, at least one author must register at the appropriate member or non-member rate based on membership status, including member, non-member, student member, student non-member, or life member.

One author registration may cover a maximum of two technical papers or presentation-only submissions, plus two additional poster presentations. An author with more than two technical papers or presentation-only submissions scheduled for podium presentation must arrange for a co-author to register.

Student Registration Eligibility

Student registration rates are available only to full-time undergraduate and graduate students who have not yet received a Ph.D. Postdoctoral researchers may not register as students. Proof of student status is required and must consist of a copy of the student identification card or a letter from the institution's registrar verifying student status.

Attendees who pay the non-member registration rate will be offered a one-time complimentary four-month ASME trial membership following the conference.

Presenter Attendance and Archival Publication

Under the ASME Presenter Attendance Policy, a paper that is not presented at the conference by an author or co-author will not be published in the official archival proceedings, which are registered with the Library of Congress and abstracted and indexed.

Technical conferences are scheduled as in-person events. Video or Zoom presentations are not a substitute for an in-person presentation.

COVID-19 Requirements

ASME in-person activities will follow all state and local laws, regulations, and guidelines regarding COVID-19 that apply to the event location. Requirements are subject to change and should be monitored regularly.

Accessibility and Accommodation Assistance

InterPACK and ASME are committed to providing an inclusive experience. If you have accessibility needs, including mobility, hearing, vision, or neurodiversity accommodations, or dietary requirements, please indicate them during registration or contact the conference team so arrangements can be made in advance.

Accessible Guest Rooms and Bathrooms

Mobility-accessible rooms: Select rooms offer either roll-in showers or accessible bathtubs.

Hearing-accessible rooms: Available features include visual alarms and notification devices for doors and incoming phone calls.

Property and Public Areas

Wheelchair access: Common entrances and interior paths are wheelchair-accessible.

Meeting and event spaces: The hotel's 31,000 square feet of meeting and event space, including 17 rooms and the Grand Ballroom, is arranged on a single level for easier navigation.

Pool: An aquatic lift is available at the outdoor pool.

Sponsors and Exhibitors

Thank You to Our Sponsors

InterPACK gratefully recognizes the organizations whose support helps advance technical exchange, collaboration, and innovation across the electronic and photonic packaging community.

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BAC is proud to be the world's cooling partner. Since 1938 we have been creating sustainable comfort cooling, process cooling, and refrigeration solutions for the most essential and demanding environments on earth. From pioneering evaporative cooling products to leading the industry toward a better tomorrow, BAC innovates for the future, so we can all advance together. Learn how you can join our vision for a better world at www.BaltimoreAircoil.com.

Website: www.baltimoreaircoil.com

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Johnson Controls, a global leader in thermal management, mission-critical building systems, energy efficiency, and decarbonization, helps customers use energy more productively, reduce carbon emissions, and operate with the precision and resilience required in rapidly expanding industries such as data centers, healthcare, pharmaceuticals, advanced manufacturing, and higher education. For more than 140 years, Johnson Controls has delivered performance where it really matters. Backed by advanced technology, lifecycle services and an industry-leading field organization, we elevate customer performance, turn goals into real-world results, and help move society forward. Visit johnsoncontrols.com for more information and follow @Johnsoncontrols on social platforms.

Website: johnsoncontrols.com

The University of Texas at Arlington (UTA)

The Electronic, MEMS, and Nanoelectronics Systems Packaging Center (EMNSPC) at The University of Texas at Arlington (UTA) is a leading research facility working on thermal management, reliability, advanced packaging, and commissioning. Directed by Dr. Dereje Agonafer, a member of the National Academy of Engineering (NAE), the center focuses on multidisciplinary research to solve thermal, reliability, thermo-mechanical, and packaging challenges faced by industry.

University website: www.uta.edu

Center website: emnspc.uta.edu

Gold Sponsors

Aegis Technologies, LLC

Aegis is an Airsys company working in electronics cooling and data-center thermal management. Founded in 2020, it focuses on liquid cooling for AI and HPC architectures and specializes in the design, simulation, 3D printing, and testing of single- and two-phase cold plates and CDU cooling systems.

Website: aegiscooling.com



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**Boyd by Eaton**

Boyd by Eaton provides thermal-management solutions for data centers, semiconductors, telecommunications, and other demanding electronics applications. Its portfolio spans liquid cooling, air cooling, conduction cooling, and two-phase technologies, including liquid cold plates that transfer heat from CPUs, GPUs, and power electronics into circulating coolant.

Website: [Boyd Thermal at Eaton](#)

Silver Sponsors**Meta**

Website: <https://www.meta.com/>

Bronze Sponsors**Binghamton University | S3IP**

S3IP brings together teams of experts from industry and the University to address pressing real-world problems in the systems integration and manufacturing of electronics. Our research centers focus on topics related to electronics packaging, flexible electronics, energy-efficient data centers and energy harvesting and storage. S3IP, a New York State Center of Excellence, and its constituent research centers have contributed more than \$2 billion in economic impact to New York State since 1996.

**Corintis**

Corintis provides chip-specific liquid cooling solutions for high-power AI and HPC chips. It offers a complete platform to reach unprecedented cooling performance — scalable to high-volume applications, fit within short product cycles, and backed by detailed simulation and experimental validation. The platform brings together three elements: Glacierware, its cooling simulation and optimization software, designs cold plates that run up to 20% cooler than standard skived cold plate.

Core Foundry uses an additive mass manufacturing process called Viscous Layer Deposition (VLD) to produce chip-specific cooling at scale.

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Website: e6.com

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Gamma Technologies develops system-level simulation software and delivers engineering services supporting complex product development across automotive, aerospace, energy, and industrial sectors. The GT-SUITE platform enables integrated modeling of thermal, fluid, mechanical, electrical, control systems and more for performance validation and design optimization.



Global Cooling Technology Group

Global Cooling Technology Group, LLC (GCTG)

Global Cooling Technology Group (GCTG) is an advanced thermal management technology company headquartered in Phoenix, Arizona. GCTG develops innovative cooling solutions for high-power-density electronics and demanding applications across commercial, automotive, aerospace, defense, mobile, data center, and energy markets. The company's flagship G-PULSE technology is a patented, ultra- thin Capillary Loop Pulsating Heat Pipe (CLPHP) that provides passive, highly efficient two-phase cooling without pumps, fans, wicks, batteries, or other moving components. GCTG combines expertise in thermal engineering, two-phase heat transfer, microchannel design, materials, manufacturing, and reliability testing to develop next-generation cooling technologies. Its solutions are designed to reduce temperature, thickness, weight, and energy consumption while enabling higher power densities in increasingly compact systems. GCTG collaborates with leading manufacturers, OEMs, universities, government agencies, and technology companies to develop, test, qualify, and commercialize advanced thermal solutions. The company's technology development has received support from the National Science Foundation and the U.S. Department of Defense, including DARPA-funded programs.

Website: www.gctg-llc.com

Google

Google develops products and technologies that help people find information, connect, and work, including Search, Android, YouTube, Google Workspace, and Gemini. Its work also spans artificial intelligence, computing research, and cloud services, with Google Cloud providing infrastructure and tools for developing and deploying AI and machine-learning applications.

Website: [About Google](#)



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Website: <https://www.staubli.com/us/en/home.html>



University of Maryland (UMD)

The Nanoscale Energy and Interfacial Transport (NEIT) Lab at the University of Maryland studies heat

transfer and interfacial transport to develop thermal management technologies for data centers, power

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Plenary Speakers

Plenary1 | Tuesday, October 27, 2026 | Cristina Amon

Date and Time	Room	Presentation Title
Tuesday, October 27, 2026 8:00 AM – 8:45 AM	Rio Vista Salon D/E	Hierarchical Electrode-to-System Battery Thermal Management and Modeling: Latest Developments and Future Directions



Speaker

Cristina Amon

University Professor,
Alumni Distinguished Professor and Dean Emerita University of Toronto

Abstract

The rapid growth of electric vehicles (EVs) and battery energy storage systems (BESS) is creating new challenges for the thermal management, safety, performance, and lifetime of increasingly large and complex lithium-ion battery systems. Addressing these challenges requires models and thermal management strategies that span multiple length scales and physical domains, from nanoscale transport in electrode materials to heat generation and degradation within cells, and to the thermal behavior of modules and packs.

This plenary lecture will present recent advances in hierarchical battery thermal management and modeling across these scales. Following an overview of battery heat generation, temperature-dependent performance and degradation, and battery thermal management systems (BTMS), we begin at the electrode level, where atomistic approaches, including density functional theory, molecular dynamics, and machine learning, provide insights into nanoscale thermal and electrochemical transport and enable exploration of novel two-dimensional materials and heterostructures for next-generation electrodes.

At the cell level, we examine the thermal and electrochemical characterization of anisotropic thermophysical properties and spatially distributed heat generation, together with temperature-driven degradation and thermal runaway in large-format lithium-ion pouch cells increasingly used in EV and BESS applications. At the module and system levels, we will highlight the challenges of scaling high-fidelity physics-based models and emerging approaches that combine hierarchical cell-to-system thermal models, deep-learning surrogates, and design optimization.

The plenary lecture will conclude with a perspective on integrating these advances into battery digital twins that span scales, physics, and data, enabling faster design exploration, improved thermal management and safety, and more predictive approaches to battery system design and operation.

Biography

Cristina Amon is University Professor, Alumni Distinguished Professor and Dean Emerita of the Faculty of Applied Science and Engineering at the University of Toronto, where she serves as Scientific Director of the Electrification Hub and Director of the ATOMS Laboratory. Prior to joining UofT in 2006, she was the Raymond J. Lane Distinguished Professor and Director of the Institute for Complex Engineered at Carnegie Mellon University. She has pioneered

advances in computational fluid dynamics and multidisciplinary, multiscale hierarchical modeling, design, and optimization of thermo-fluid systems, with applications spanning electronics and electric-vehicle thermal management, renewable energy, and biomedical devices.

Professor Amon is an Officer of the Order of Canada, member of the National Academy of Engineering, and fellow of the Royal Society of Canada, Canadian Academy of Engineering, Canadian Academy of Health Sciences and Spanish Royal Academy. Her honors include the ASME InterPACK Achievement Award (now the Bar-Cohen Memorial Medal), ASME Heat Transfer Memorial Award, ASME Honorary Member, Engineers Canada Gold Medal and Professional Engineers Ontario Gold Medal for engineering excellence, leadership, and public service.

She is the founding chair of the Global Engineering Deans Council and has served on several corporate and nonprofit boards. She earned her M.S. and Sc.D. from MIT and a Mechanical Engineering degree from Simon Bolivar University.

Plenary 2 | Tuesday, October 27, 2026 | Samuel Graham

Date and Time	Room	Presentation Title
Tuesday, October 27, 2026 8:45 AM – 9:30 AM	Rio Vista Salon D/E	AlN: The New Nitride Semiconductor on the Block



Speaker

Samuel Graham

Dean of Engineering
University of Maryland

Abstract

Wide bandgap electronics are critical to the development of future power, RF, and optoelectronics and have become ubiquitous in our everyday lives. The development of these devices has moved its focus from wide bandgap materials (GaN at 3.4 eV) to ultrawide bandgap materials (3.4 eV to 4.5 eV) and extreme bandgap materials (above 4.5 eV). Interest in moving from wide bandgap to extreme bandgap devices is driven by semiconductor figures of merit that increase nonlinearly with bandgap. Today, high-aluminum-content AlGaIn and AlN are beginning to show promise for optoelectronic, RF, and power electronics systems. Moreover, recent developments in n-type and p-type doping of AlN have opened new possibilities for creating p–n junctions and semiconductors with extreme bandgaps and inherently high thermal conductivity. However, challenges remain in developing extreme bandgap devices ranging from high-aluminum-content AlGaIn to doped AlN systems.

In this talk, we will cover the development of AlGaIn and AlN semiconductors and some of the challenges associated with these materials. In particular, we will address thermal issues and potential device-design solutions. The talk will cover characterization of the thermal properties of materials and interfaces, methods for doping AlN, and the effects of doping on device thermal performance. Several architectures being pursued to harness the promising characteristics of AlN-based electronics will be discussed, including substrates, active materials, and capping materials. Processing–property–performance relationships are critical to understanding these devices, and areas that require further attention from the community will be identified.

Biography

Dr. Samuel Graham is the Nariman Farvardin Professor and Dean of Engineering at the University of Maryland. Prior to joining the University of Maryland, he was a professor and chair of the Woodruff School of Mechanical Engineering at the Georgia Institute of Technology. He holds a joint appointment with the National Laboratory of the Rockies and serves on the Emerging Technologies Technical Advisory Committee for the U.S. Department of Commerce and the Advisory Committee for Nuclear Security for the NNSA. He is an Honorary Member of ASME and a Fellow of AAAS and ASTFE. His research expertise includes the thermal characterization and reliability of wide bandgap semiconductor technologies and the packaging of organic and flexible electronics. He recently received the IEEE ITherm Richard Chu Award for Excellence in Thermal and Thermo-mechanical Management of Electronics and the ASME Allan Kraus Medal for Thermal Management.

Plenary 3 | Wednesday, October 28, 2026 | Shintaro Itoh

Date/Time: Wednesday, October 28, 2026, 8:00 AM – 8:45 AM

Location: Rio Vista Salon D/E

Title: Wetting Phenomena in Nanoscale Spaces



Speaker: Shintaro Itoh,
Professor,
Nagoya University

Abstract

Wetting and capillary-driven transport in confined spaces play essential roles in a wide range of engineering systems, from nanoimprint lithography and advanced manufacturing to micro/nanofluidic devices and thermal management technologies such as heat pipes. As characteristic dimensions decrease to the nanometer scale, however, liquid transport can no longer be understood simply as a scaled-down version of macroscopic wetting and capillary flow. Confinement enhances the relative importance of solid-liquid interactions and introduces additional phenomena such as changes in molecular mobility, gas entrapment, and capillary condensation.

In this talk, nanoscale wetting will be discussed through real-time observations of liquid invasion into nanochannels with depths on the order of tens of nanometers. Experiments with photocurable liquids reveal highly nonuniform wetting accompanied by the formation of numerous nanoscale bubbles. More importantly, as the channel depth decreases, the observed wetting dynamics deviate significantly from predictions based on conventional capillary-flow models. These observations suggest that nanoscale wetting is governed by the coupled effects of capillary forces, interfacial interactions, confinement-induced changes in liquid dynamics, gas behavior, and condensation.

These findings will be discussed not only in the context of nanoimprint lithography, where rapid and defect-free filling of nanoscale cavities is critical, but also from a broader perspective of liquid transport in confined geometries. Understanding how wetting and capillary transport change under nanoscale confinement may provide a common physical framework for designing next-generation manufacturing processes, micro/nanofluidic systems, and thermal management devices in which capillary transport governs liquid supply and heat-transfer performance.

Biography

Shintaroltoh received the Ph.D. degree in electromechanical engineering from Nagoya University in 2006. Presently he is Professor in the Department of Micro-Nano Mechanical Science and Engineering at Nagoya University.

His research areas include nano-metrology, nano-tribology, nano-rheology, and nano-fluidics. His research interests include various kinds of solid-liquid interfacial phenomena ranging from confined liquids between solid surfaces to molecularly thin liquid films on solid surfaces.

Plenary 4 | Wednesday, October 28, 2026 | 8:45 AM – 9:30 AM | Debbie G. Senesky

Date/Time: Wednesday, October 28, 2026, 8:45 AM – 9:30 AM

Location: Rio Vista Salon D/E

Title: “Tiny-but-tough:” Microelectronics for In-Situ Operation within Extreme Environments



Speaker: Debbie G. Senesky

Associate Professor, Aeronautics & Astronautics Department and
Electrical Engineering Department, Stanford University

Co-Founder, Astral Materials

Chair, Community of Shared Research Platforms (C-ShaRP)

Senior Fellow, Precourt Institute for Energy

Abstract

Widebandgap semiconductor materials such as silicon carbide (SiC), gallium nitride (GaN), and diamond are well known for their inherent resilience to high-temperature and radiation-rich environments. This makes them attractive "in situ" electronic platforms for use in space exploration and other extreme-environment applications (e.g., nuclear reactors, data centers, downhole, hypersonic aircraft). Gallium nitride (GaN) electronics have operated at temperatures as high as 1000°C, making it a viable platform for robust space-grade (“tiny-but-tough”) microelectronics and nano-satellites. Even with this major technological breakthrough, there are still challenges in making GaN in low-cost formats with low defect density for proliferation in “beyond silicon” applications. New communities are adopting this microelectronic platform for a multitude of emerging device and diagnostic applications including the following: sensing, energy harvesting, actuation, and communication. In this talk, we will review and discuss the benefits of GaN’s two-dimensional electron gas (2DEG) and SiC device architectures over silicon’s p-n junction for a wide range of emerging applications (e.g., in-situ nuclear/fusion/fission energy diagnostics, temperature-tolerant Venus probes, and more!).

Biography

Debbie G. Senesky is an Associate Professor at Stanford University in the Aeronautics and Astronautics Department and the Electrical Engineering Department. She is the Principal Investigator of the EXtreme Environment Microsystems Laboratory (XLab). Her research interests include the advancement of microelectronics, sensors, and nanomaterials for extreme-environment applications (e.g., space exploration, nuclear energy, and geothermal energy). She received the B.S. degree (2001) in mechanical engineering from the University of Southern California.

She received the M.S. degree (2004) and Ph.D. degree (2007) in mechanical engineering from the University of California, Berkeley. In recognition of her research, she received the Presidential Early Career Award for Scientists and Engineers (PECASE) in 2025, Emerging Leader Abie Award from AnitaB.org in 2018, Early Faculty Career Award from the National Aeronautics and Space Administration (NASA) in 2012, Gabilan Faculty Fellowship Award in 2012, and Sloan Ph.D. Fellowship from the Alfred P. Sloan Foundation in 2004. Prof. Senesky's career path and research have been featured by Scientific American, Seeker, People Behind the Science podcast, The Future of Everything radio show, Space.com, and NPR's Tell Me More program. More information about Prof. Senesky can be found at <https://xlab.stanford.edu/> and on Instagram (@astrodebs).

Plenary 5 | Thursday, October 29, 2026 | 8:00 AM – 8:45 AM | Bahgat Sammakia

Date/Time: Thursday, October 29, 2026, 8:00 AM – 8:45 AM

Location: Rio Vista Salon D/E

Title: Thermal Management of Data Centers in the Age of AI



Speaker: Bahgat Sammakia,
Distinguished SUNY Professor and Director,
Binghamton University

Abstract

The extraordinary growth of artificial intelligence is driving a fundamental transformation in data-center power and thermal management. AI training and inference systems increasingly rely on high-power GPUs and accelerators, high-bandwidth memory (HBM), chiplet-based architectures, and advanced heterogeneous packaging. Individual processors are approaching and exceeding the kilowatt power level, while AI rack power densities are progressing from tens of kilowatts toward 100–200 kW and far beyond. These trends are rapidly challenging the practical limits of conventional air cooling and making thermal management a primary constraint on system performance, reliability, energy efficiency, and data-center scalability.

This presentation examines the thermal-management technologies required to support this rapidly evolving AI infrastructure, with highlights of research at Binghamton University. Particular attention will be given to the transition from air cooling to single-phase direct liquid cooling, where cold plates bring the coolant close to high-power processors and other critical components. Direct liquid cooling can provide substantially greater heat-removal capability than air cooling while reducing fan power and enabling higher rack densities. However, increasing chip heat flux, localized hotspots, HBM integration, chiplets, and three-dimensional packaging are creating additional challenges at the package-to-coolant interface.

As heat fluxes and rack power densities continue to increase, two-phase liquid cooling becomes increasingly attractive. By utilizing the latent heat associated with phase change, two-phase systems can potentially remove very high heat fluxes while maintaining relatively uniform component temperatures and reducing coolant flow requirements. Technologies including two-phase cold plates, dielectric immersion cooling, and refrigerant-based approaches will be discussed, together with challenges involving flow stability, pressure control, critical heat flux, materials compatibility, reliability, and system integration.

The presentation will connect thermal challenges across the hierarchy from the chip and package to the server, rack,

and data center, and will consider the growing interaction between thermal management, power delivery, advanced packaging, and facility infrastructure. Looking forward, thermal management will no longer simply respond to the power generated by computing hardware. Increasingly, the available cooling technology will help determine how much computing power can be packaged into a chip, server, rack, and ultimately an AI data center. Advanced single- and two-phase liquid cooling will therefore be key enabling technologies for the performance, density, energy efficiency, and sustainability of future AI computing systems.

Biography

Professor Bahgat G. Sammakia is a Distinguished Professor of Mechanical Engineering at Binghamton University and a widely recognized leader in thermal management, electronics packaging, and heat transfer. He has built a distinguished career spanning academia and industry, including senior technical leadership roles at IBM and major academic leadership positions at Binghamton University, where he served as Vice President for Research from 2011 to 2025. He is also the founding director of S3IP, a New York State Center of Excellence, and ES2, an NSF IUCRC center. These roles reflect his long-standing commitment to advancing innovation in electronic systems, heterogeneous integration, and energy-efficient technologies.

Over the course of his career, Professor Sammakia has authored more than 350 peer-reviewed publications, earned more than 11,000 citations, and developed a substantial patent portfolio in advanced cooling, packaging, and thermal-management technologies. His work has had broad impact on next-generation electronic systems and data-center efficiency. His honors include election as a Fellow of ASME and IEEE, the ASME Heat Transfer Memorial Award, and Fellow status in the National Academy of Inventors.

Plenary 6 | Thursday, October 29, 2026 | 8:45 AM – 9:30 AM | Imran Latif

Date/Time: Thursday, October 29, 2026, 8:45 AM – 9:30 AM

Location: Rio Vista Salon D/E

Title: Every Watt a Token: Agentic AI Cooling from Chip to Chiller



Speaker: Dr. Imran Latif,
Vice President, Technology & Ecosystem – AI Data Centers,
Johnson Controls International

Abstract

AI data center capacity is set to triple by 2030, but grid power cannot keep up. When the power budget is fixed, every megawatt saved by the cooling plant can instead support computing. This talk follows heat from chip to chiller and presents a coupled simulation of 3,360 NVIDIA B200 GPUs, cold plates, a coolant distribution unit and an air-cooled chiller. Eight zero-shot LLM agents controlled the chiller setpoint and pump speed and were evaluated on tokens per joule. Every agent saved energy, achieving up to an 11.5% higher reward and a 10.3% reduction in PUE. However, as control complexity increased, most agents overheated the chips—demonstrating why efficiency metrics alone cannot certify an AI controller.

Biography

Dr. Imran Latif is Vice President, Technology & Ecosystem – AI Data Centers at Johnson Controls International. He has more than two decades of experience spanning the design, construction and operation of AI, high-performance

computing and hyperscale data centers. Before joining Johnson Controls, he served as Chief Operations Officer for Data Center Infrastructure at Brookhaven National Laboratory, where he supported advanced computing environments, including infrastructure for CERN research, IBM's Blue Gene/Q supercomputer and quantum-computing systems. His expertise includes liquid and immersion cooling, high-density GPU infrastructure, thermal management and energy-efficient data-center operations. Dr. Latif holds a Ph.D. in Artificial Intelligence, a master's degree in mechanical engineering and is a licensed Professional Engineer.

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FROM CHIP TO SYSTEM.

Understand the physics between them.

Model thermal, fluid, electrical and control-system interactions across scales—from electronics and cold plates to cooling loops and complete systems.

CHIP PACKAGE COLD PLATE TIM MANIFOLD PUMP CDU HEAT EXCHANGER FACILITY LOOP CHILLER

DON'T JUST SIMULATE THE COMPONENT.

SIMULATE WHAT IT LIVES IN.

Chip. Package. Cold Plate. CDU. Power. Controls. Facility.

Understand how every component interacts with the complete system—before you build it.

ELECTRONICS & COLD PLATES
TWO-PHASE / SINGLE-PHASE COOLING
CDU & HEAT EXCHANGERS
PUMPS & FLOW DISTRIBUTION
CONTROLS & SYSTEM OPTIMIZATION

THE NEXT THERMAL BREAKTHROUGH IS A SYSTEM PROBLEM.

From electronics to cooling systems.
From components to complete architectures.

AI DATA CENTERS
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Thermal: FLUID: ELECTRICAL: MECHANICAL: MECHANICAL: CONTROLS:

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Workshops, Tutorials, and Panels

Overview

Date	Topic	Type
Tuesday, October 27	Mechanics for Electronics	Panel
Tuesday, October 27	Efficient Thermo-Mechanical Simulations Using Superelements	Tutorial
Wednesday, October 28	~~Thermal and Mechanical Challenges and Opportunities for Advanced~~ Mobile, Wireless, AI, IoT, Automotive, and High-Power Computing Devices	Panel
Wednesday, October 28	STM and 3D Reduced Order Models	Tutorial
Wednesday, October 28	AI, Machine Learning and Industry Trends	Tutorial
Wednesday, October 28	Electrochemical Additive Manufacturing for data center direct to chip liquid cooling applications	Tutorial
Wednesday, October 28	Thermal-Fluid Challenges in Liquid Cooling Systems for High-Performance Data Centers: From Chip to Cooling Tower	Panel
Thursday, October 29	Two-Phase Cooling System for Electronics	Panel
Thursday, October 29	Advances in Reliability from packaging to data center cooling facility	Panel
Thursday, October 29	Optical Connectivity in ML Fabrics: CPO, LPO and NPO — Trade-offs and Opportunities	Tutorial
Thursday, October 29	AI, Simulation, and the Future of Thermal Engineering: Practical Applications from Chips to Data Centers	Panel

Tutorial: Efficient Thermo-Mechanical Simulations Using Superelements

Date: Tuesday, October 27, 2026

Time: 2:00–3:30 PM PT

Room: Rio Vista Salon G/H

Tutorial leader: Prof. Dr.-Ing Tamara Bechtold, Professor of Mechatronic Systems, Jade University of Applied Sciences (aided by Patrick Kohaus, M.Eng.)

Description:

Heat is a key limiting factor in many modern technologies. From highly integrated electronics and microelectronic packaging to batteries and electrical machines, thermal and thermo-mechanical effects strongly influence performance, reliability, and lifetime.

High-fidelity finite element simulations can capture these effects accurately, but today's models are often too large and computationally expensive for fast design studies, optimization, control, or system-level simulation. Compact surrogate models offer an attractive solution: they retain the essential physics while drastically reducing computational cost.

In this tutorial, industry-relevant examples are used to demonstrate how compact thermo-mechanical models can accelerate digital product development, enable efficient optimization and control, and support IP-protected model exchange along the supply chain. The tutorial introduces the underlying principles of model order reduction in an accessible way and shows how these methods can be integrated into practical engineering workflows.

Particular emphasis is placed on superelement-based approaches for thermal and thermo-mechanical applications. Participants will gain an overview of current modeling strategies, state-of-the-art software tools, and practical implementation aspects, including model generation, coupling, and reuse in system-level simulations.

Tamara Bechtold — Biography:

Tamara Bechtold received her PhD in microsystem simulation from the University of Freiburg, Germany, in 2005. From 2006 to 2010, she worked as a research engineer at Philips Research Laboratories and NXP Semiconductors in Eindhoven, The Netherlands. Her work focused on enhancing standard IC design flows through model order reduction and optimization methods. She also worked at CADFEM.

From 2011 to 2014, she served as interim Professor of Microsystems Simulation at the University of Freiburg. She subsequently joined the University of Rostock, Germany, where she worked as a lecturer and research group leader. Since 2017, she has been a full Professor of Mechatronic Systems at Jade University of Applied Sciences in Wilhelmshaven, Germany. Since 2022, she has also served as Managing Director of a Steinbeis Transfer Center.

Dr. Bechtold is the author or co-author of more than 150 scientific and technical publications in the field of modeling and simulation of micro- and mechatronic systems. She is the lead author of the Springer textbook Fast Simulations of Electro-Thermal Microsystems: Efficient Dynamic Compact Models and the main editor of System-Level Modeling of MEMS, published by Wiley-VCH within the Advanced Micro and Nanosystems series.

Her research interests include advanced methods of model order reduction, topology optimization, and multi-physics modeling at both device and system level. A particular focus of her work is the development of efficient compact models for engineering applications, enabling simulation, optimization, control, and model exchange in industrial design processes.

Patrick Kohau

Research Associate, Jade University of Applied Sciences

Biography:

Patrick Kohaus, M.Eng., is a research associate at Jade University of Applied Sciences. His work focuses on model order reduction, dynamic electrical microsystems, and reliability analysis in microelectronics. He began doctoral research in February 2026 through the MikroVAL project in cooperation with the University of Rostock.

Tutorial: STM and 3D Reduced Order Models

Date: Wednesday, October 28, 2026

Time: 2:00–3:30 PM PT

Room: Rio Vista Salon G/H

Tutorial leaders: Dr. Vishal Talari, Senior Application Engineer, Synopsys; Kiran Gavini, Senior Staff R&D Engineer,

Synopsys

Dr. Vishal Talari — Biography:

Vishal Talari supports the Ansys Icepak product line, focusing on electronics cooling, CFD, and advanced thermal-management architectures. He earned his Ph.D. from the University of Houston and completed postdoctoral research at the University of Texas at Arlington.

Kiran Gavini — Biography:

Kiran Gavini leads software development for Icepak. His work includes performance optimization, surrogate modeling, GPU-based solver development, and simulation agents. He holds an M.S. in Electrical Engineering from the University of Missouri–Kansas City.

Tutorial: AI, Machine Learning and Industry Trends

Date: Wednesday, October 28, 2026

Time: 3:45–5:15 PM PT

Room: Rio Vista Salon G/H

Tutorial leader: Dr. Remco van Erp, Co-Founder and CEO, Corintis, Switzerland

Remco van Erp — Biography:

Dr. Remco van Erp is co-founder and CEO of Corintis, a Swiss-based company that develops liquid cooling solutions for data center applications. Remco received B.S. and M.S. degrees in mechanical engineering from the Eindhoven University of Technology, Eindhoven, The Netherlands and holds a Ph.D. degree in microsystems and microelectronics with the École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

Tutorial: Electrochemical Additive Manufacturing for data center direct to chip liquid cooling applications

Date: Wednesday, October 28, 2026

Time: 5:15–6:30 PM PT

Room: Rio Vista Salon G/H

Tutorial leader: Ian Winfield

Leader title and affiliation: Vice President, Product & Applications, Fabric8Labs

Biography:

Ian Winfield is Vice President of Product & Applications at Fabric8Labs, where he leads product and application development for Electrochemical Additive Manufacturing (ECAM), including advanced thermal-management solutions for AI and high-performance computing systems. He has extensive experience spanning advanced materials, electrochemical manufacturing, engineering leadership, product development, and commercialization. Prior to Fabric8Labs, he held engineering and program leadership positions at Viasat and UTC Aerospace Systems and led R&D programs involving nanostructured metals and electrochemical processing at Integran Technologies. Winfield holds an M.A.Sc. in Materials Science and Engineering from the University of Toronto and an MBA with a Finance specialization from San Diego State University. His combination of technical and commercialization expertise supports the translation of advanced manufacturing concepts into scalable, application-focused engineering solutions.

Tutorial: Optical Connectivity in ML Fabrics: CPO, LPO and NPO — Trade-offs and Opportunities

Date: Thursday, October 29, 2026

Time: 2:00–3:30 PM PT

Room: Rio Vista Salon G/H

Tutorial leader: Dr. Amr S. Helmy, University of Toronto

Leader title: Professor, Electrical and Computer Engineering

Dr. Amr S. Helmy — Biography:

Dr. Amr S. Helmy is a professor in the Department of Electrical and Computer Engineering at the University of Toronto. Prior to his academic career, Amr held a position at Agilent Technologies - UK, between 2000 and 2004. At Agilent his responsibilities included developing lasers and monolithically integrated optoelectronic circuits. He received his Ph.D. and M.Sc. from the University of Glasgow with a focus on photonic integration technologies, in 1999 and 1995 respectively. His research covers quantum and nonlinear integrated photonic devices and circuits, hybrid metallic nanophotonic architectures, and applications in optical signal processing, communications, and sensing. His research interests include photonic device physics, with emphasis on plasmonic nanostructures, nonlinear and quantum photonics addressing applications in information processing / sensing, and data communications. Amr is an active volunteer and leader of the IEEE Photonics Society, currently serving as an Elected Member of the Society's Board of Governors and as a Distinguished Lecturer. He was also the recipient of the Society's 2019 Distinguished Service Award.

Panel 1: Thermal and Mechanical Challenges and Opportunities for Advanced Mobile, Wireless, AI, IoT, Automotive, and High-Power Computing Devices

Date, time, and room: Wednesday, October 28, 2026 | 11:15 AM–12:45 PM | Rio Vista Salon G/H

Moderator: Dr. Victor Chiriac, CEO, Global Cooling Technology Group, LLC

Moderator biography: Dr. Victor Chiriac is an ASME Fellow, CEO and Managing Director of Global Cooling Technology Group, LLC. Held technology and engineering leadership roles, led corporate thermal technology teams and roadmaps, worked on leading-edge wireless technologies with Motorola (1999–2010), Qualcomm (2010–2018) and Futurewei USA (2018–2019). Elected Chair of the ASME K-16 Electronics Cooling Committee in 2015 and the Arizona and New Mexico IMAPS (International Microelectronics and Packaging Society) Chapter President in 2010. Co-editor of Electronics Cooling Magazine since 2016 and leading member of the organizing committees of ASME/InterPack, IMECE and IEEE/ITHERM. 27 U.S. and International issued patents, 2 US Trade Secrets, 1 US Defensive Publication and 117 papers in scientific journals and at conferences. Recipient of the ASME K-16 Clock award in 2018 for “scientific contributions and leadership in promoting best thermal management of electronics engineering practices”. Diamond Innovation and Technology Leadership Awards at Qualcomm in 2016–2017, and the Corporate Award for Technology Innovation at Motorola in 2002. PhD (1999) in Aerospace and Mechanical Engineering, University of Arizona, Tucson, USA.

Panel summary: The digital era demands higher performance, increased data processing, and faster processors. Heterogeneous computing, which includes CPUs, GPUs, high-speed interconnects, and other elements, is driving advancements in the industry. The rise of 5G/6G technologies is accelerating mobile communication, AI, and IoT, creating infrastructure for vast amounts of data and fostering smarter, more connected environments. This panel will explore the future of thermal management in electronics and address advanced system-level thermal, mechanical, and electrical challenges, as well as technical and business solutions.

Panelist:

Eric Bert, President, Exentis AG USA / Exentis North America;

Amy Marconnet, Professor, Purdue, USA; Remco van Erp, CEO, Corintis, Switzerland;

Yogendra Joshi, former Program Director, DARPA, Professor, Georgia Tech, USA;

Ross Wilcoxon, Senior Fellow, Collins Aerospace, USA.

Eric Bert — President, Exentis North America

Biography: Eric Bert holds a BSME from UMass-Amherst and has a 30+ year track record in disruptive manufacturing technology introduction and management. Eric currently serves as President of Exentis North America and is responsible for building a North American beachhead for Switzerland based Exentis Group AG. Prior roles in Additive Manufacturing included: SVP Commercial at Inkbit, COO at 3DMEDiTech, SVP Global Sales at ARCAM (a GE Additive company), and SVP at Stratasy North America during its high growth period. Earlier, Eric held technology and management positions in the high-volume printed circuit and electronics assembly sectors. He further completed expat assignments in Thailand and Australia starting-up, building, and operating large-scale manufacturing operations.

Presentation title: Additive Screen Printing: Industrialized AM Technology for Production of Parts with Ultra-Fine Features and Structures Using a Wide Range of Materials

Presentation abstract: Additive Screen Printing is a new approach to sinter based additive manufacturing for volume mass production of industrial parts. Using conventional screenprinting techniques combined with high-speed precision optics and industrial handling automation, Exentis has introduced a new, unique technology platform that enables costeffective, mass production of industrial parts with ultra-fine features and structures using a wide range of metals, ceramics, and other materials. This presentation will outline how the technology works, its capabilities compared to conventional production technologies like PM, MIM/CIM, and other additive techniques, as well as outline several thermal management cooling structure part applications where Exentis' capability to produce very small holes, thin walls, and clean, complex micro-channels, using highly thermally conductive materials, delivered successful results. More information on Exentis can be found at www.exentis-group.com

Professor Amy Marconnet — Purdue

Biography: Professor Amy Marconnet is a professor of Mechanical Engineering and professor of Materials Engineering (by Courtesy), as well as a University Faculty Scholar and Associate Director of the Semiconductor Degrees Program, at Purdue University. She received a B.S. in Mechanical Engineering from the University of Wisconsin – Madison in 2007, and an M.S. and a PhD in Mechanical Engineering at Stanford University in 2009 and 2012, respectively. She then worked briefly as a postdoctoral associate at the Massachusetts Institute of Technology, before joining the faculty at Purdue University in August 2013. She spent her 2021–22 sabbatical conducting research at Karlsruhe Institute of Technology, and, in Spring 2023, she worked at Raytheon Technologies Research Center. She has won several awards, including the ASME Bergles-Rohsenow Young Investigator Award in Heat Transfer (2020), the Outstanding Graduate Student Mentor from the Official Mechanical Engineering Graduate Association (OMEGA) and the College of Engineering (2020), and the Journal of Electronic Packaging's Associate Editor Service Award (2025), as well as several outstanding paper awards at conferences including ITherm and InterPACK. As a Fellow of ASME, she is an active leader in the thermal sciences community, currently serving as chair of the ASME K-16 Committee on Heat Transfer in Electronic Equipment and formerly as General Chair of IEEE ITherm in 2025.

Presentation title: Thermal Engineering of Materials for Advanced Packaging

Presentation abstract: Heat transfer is a limiting factor in the reliability and performance of nextgeneration electronic devices. Modern electronic devices integrate numerous components with a high density of interfaces into systems that have limited heat dissipation pathways, exacerbating the thermal challenges. Each component has different thermal design powers and different thermal limits. Strategic materials design can enable new functionality such as isolation of more delicate components in advanced systems or active control of the heat transfer pathways in the system. Specifically, we develop advanced ultra-low thermal conductivity aerogels for thermal isolation within 3D chip stacks and develop new thermally conductive, electrically insulating, and mechanically flexible polymers to effectively move heat throughout electronic packages. Ultimately, thermally informed design of the architecture can lead to more efficient, reliable, and high-performance. [SOURCE SENTENCE INCOMPLETE]

Dr. Remco van Erp — Corintis

Biography: Dr. Remco van Erp is co-founder and CEO of Corintis, a Swissbased company that develops liquid cooling solutions for data center applications. Remco received B.S. and M.S. degrees in mechanical engineering from the Eindhoven University of Technology, Eindhoven, The Netherlands and holds a Ph.D. degree in microsystems and microelectronics with the École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

Presentation title: Advancing single-phase liquid cooling performance for data center applications through co-design between chip and cold plate.

Presentation abstract: Data center GPUs and AI accelerators have reached thermal design powers in the kW-range. These chips are highly heterogeneous in nature, with compute, memory and other functionalities integrated in a complex three-dimensional assembly with non-uniform heat sources and material properties. In contrast, skived cold plates are uniform by nature, with limited ability to tune performance to the underlying chip. Co-design between the chip and cold plate allows for double-digit performance improvement. Corintis provides a platform to enable co-designed liquid cooling solutions at scale: Glacierware - Cooling optimization software to adapt cold plate channel layout to the chip, Core Foundry - high-volume additive manufacturing of precise features in copper to bring these designs to life, and Terminator – a testbed with highresolution programmable silicon TTVs to validate cooling performance with precision.

Prof. Yogendra Joshi — Georgia Tech; former Program Director, DARPA

Biography: Yogendra Joshi is Professor and John M. McKenney and Warren D. Shiver Distinguished Chair at the G.W. Woodruff School of Mechanical Engineering at the Georgia Institute of Technology. He completed his tenure as a Program Manager at the Defense Advanced Research Projects Agency (DARPA) Microsystems Technology Office in July 2026. He is the author or co-author of over four hundred fifty publications in this area, including over two hundred twenty-five journal articles. He is an elected Fellow of the ASME, the American Association for the Advancement of Science, and IEEE. He is a recipient of IEEE SemiTherm Significant Contributor Award (2009), IIT Kanpur Distinguished Alumnus Award (2011), ASME InterPack Achievement Award (2011), ITerm Achievement Award (2012), ASME Heat Transfer Memorial Award (2013), and AIChE Donald Q. Kern Award (2018). He currently serves as Senior Area Editor for IEEE Transactions on Components, Packaging and Manufacturing Technology.

Presentation title: Thermal test vehicles for next gen high power liquid cooled chips & packages

Presentation abstract: The thermal packaging community is actively engaged in developing direct to-chip and embedded thermal management technologies for machine learning and artificial intelligence chips, as well as other demanding heterogeneous integration applications. This presentation will discuss the current state-of-the-art of thermal test vehicles, and challenges in characterizing cooling solutions for high power chips and packages that currently do not exist. A key feature of the emerging 2.5D and 3D multi-die architectures is the complex and dynamic nature of the power maps. Characterizing the impact of these on various emerging thermal solutions is vital, and a continuing challenge.

Ross Wilcoxon — Senior Technical Fellow, Collins Aerospace

Biography: Ross Wilcoxon is a Senior Technical Fellow with Collins Aerospace in Cedar Rapids, Iowa, USA. He conducts research and supports product development in the areas of thermal management, reliability and electronics packaging technologies for avionics systems. He is an editor of Electronics Cooling Magazine and received the SEMI-THERM Symposium Thermi Award in 2021. Prior to joining Collins in 1998, he was an assistant professor of mechanical engineering at S. Dakota State University.

Presentation title: New Test Methods for Advanced Thermal Interface Materials

Presentation abstract: New commercial thermal interface materials exhibit impressive improvements relative to their predecessors. For example, new gap filler materials have 10x better thermal conductivity than state of the art materials from only a few years ago. These impressive characteristics are in part enabled by novel structures and materials that fundamentally behave differently from those materials that were conventionally used. These new behaviors need to be understood and quantified in order to properly use the materials; this presentation will briefly

discuss some of the ways that these new materials may be tested to better characterize their performance in actual use environments.

Panel 2: Thermal-Fluid Challenges in Liquid Cooling Systems for High-Performance Data Centers: From Chip to Cooling Tower

Date, time, and room: Wednesday, October 28, 2026 | 5:15 PM–6:45 PM | Rio Vista Salon G/H

Moderators: Alfonso Ortega and Yoonjin Won

Dr. Alfonso Ortega — Biography: Dr. Alfonso Ortega is the James R. Birle Professor of Energy Technology at Villanova University and Professor of Mechanical and Sustainable Engineering. He is the Director of the Laboratory for Advanced Thermal and Fluid Systems which he has led for over 30 years. He is the Founding Director of the Villanova site of the NSF Center for Energy Smart Electronic Systems (ES2) founded in 2011. He is an internationally recognized expert in thermal and energy management in electronic systems, data center thermal management, and experimental measurements in the thermal-fluid sciences. He is a Fellow of the ASME and received the 2003 SEMITHERM THERMI Award and the 2017 ITherm Achievement Award. In 2023 he received the SEMI-THERM Hall of Fame Award for his career contributions to the field.

Dr. Yoonjin Won — Biography: Dr. Yoonjin Won is a Professor of Mechanical and Aerospace Engineering at the University of California, Irvine, with courtesy appointments in Electrical Engineering and Computer Science and Materials Science and Engineering. Her research combines multiphase thermal science, AI for science, scientific machine learning, and computer vision. She leads ML4HEAT, a Department of Defense MURI program. Her honors include the NSF CAREER Award, several ASME awards, and UCI awards for innovation and research excellence. She earned her B.S. from Seoul National University and her M.S. and Ph.D. from Stanford University.

Confirmed panelists: Arad Azizi, Tech Lead, Data Center Thermal Management, Solstice Advanced Materials, USA; Richard Bonner, Chief Technology Officer, Accelsius, USA; Utkarsh Charapale, Manager, Technology Innovation, Vertiv, USA; Tao Geng, R&D Director, Trane Technologies, USA; Devin Pellicone, Director, Data Center Product Development, ACT, USA; Milad Samie, Senior R&D Specialist, CoolIT, Calgary, Canada.

Arad Azizi — Solstice Advanced Materials

Biography: Arad Azizi, Ph.D. is the Technical Lead for Data Center Thermal Management at Solstice Advanced Materials, leading R&D initiatives for next-generation cooling solutions from chip to chiller, with expertise in advanced liquid cooling and two-phase thermal management technologies. He is a member of the COOLERCHIPS program and serves on the Industry Advisory Board for the ES2 Center, where he helps guide academic/industry research collaborations. He earned a Ph.D. in Mechanical Engineering and completed postdoctoral training under Prof. Scott Schiffrin at Binghamton University.

Presentation abstract: Two-phase direct-to-chip (DTC) cooling architectures offer a promising path to support megawatt-scale rack deployments while increasing facility water temperatures and improving overall energy efficiency. However, broader adoption of 2P DTC technologies requires overcoming several technical challenges, including component- and system-level design, sensing and controls, material compatibility, supply chain readiness, and long-term reliability. I will discuss the opportunities and challenges associated with deploying two-phase cooling solutions across the thermal stack and highlight key considerations for accelerating industry adoption.

Richard Bonner — Accelsius

Biography: Richard Bonner, Ph.D. is a distinguished heat transfer researcher with 18 years in thermal product development, specializing in two-phase cooling. He authored over fifty papers and holds five U.S. patents, designed cooling products for 125+ clients. He is a former AIChE Transport and Energy Processes Division Director and holds a B.S., M.S., and Ph.D. in Chemical Engineering from Lehigh University. Currently, he serves as CTO for Accelsius, a two-phase, direct-to-chip liquid cooling company.

Presentation abstract: This presentation will cover several technical challenges in different subsystems remaining in high power two-phase cooled racks and CDUs. In the servers, vapor removal and transport through key choke points, including the quick-disconnects, remains a significant bottleneck impacting pumping power AND system level thermal resistance. In the condenser, temperature profile mismatch between azeotropic fluids and facility water result in significant thermal penalties. Using appropriate zeotropic fluids or two-phase facility loops, the condenser temperature profile can be improved, resulting in condenser approach temperature differences that can be over 70% lower.

Tao Geng — Trane Technologies

Biography: Tao Geng has over 15 years of R&D and product development leadership experience in thermal management, heat transfer, and the introduction of innovative products from concept through commercialization. He currently serves as R&D Director at the Center for Advanced Liquid Cooling Solutions (CALCS) at Trane Technologies, where he leads development of advanced data center liquid cooling technologies, including single-phase and two-phase direct-to-chip solutions, while shaping the company's R&D roadmap and building technical teams. **Presentation abstract:** I will discuss the first in-house design of two-phase cold plates, highlighting the benefits of microchannel skived-fin cold plates, whose manufacturing processes support consistent quality, reduced defect risk, and improved durability over extended service life. The presentation addresses the critical tradeoffs between maximizing thermal performance and preserving mechanical integrity under high operating pressures. Future opportunities for performance and durability enhancement through advanced surface treatments are presented.

Devin Pellicone — Advanced Cooling Technologies

Biography: Devin Pellicone is the Director of the Data Center product development group at Advanced Cooling Technologies in Lancaster, PA. He has a B.S. in Mechanical Engineering from Temple University and an M.S. in Mechanical Engineering from Villanova University. He has over 15 years of experience designing and building both passive and active two-phase cooling systems for a wide range of applications. Specifically, he has led two-phase cooling programs ranging in power from 100 Watts to 100 kW for industries like high-performance computing and power electronics cooling. Devin has numerous pending and active patents that are related to two-phase cooling products and he has authored or coauthored many conference and journal papers on the topic.

Presentation topic: As rack densities in high-performance data centers push toward 1 MW per rack—driven largely by AI workloads—the limitations of air cooling have become undeniable, prompting rapid adoption of single-phase liquid cooling. Yet even single-phase solutions are projected to reach a practical ceiling as power densities continue to climb. This raises a critical industry question: At what point does single-phase cooling become insufficient? This panel talk will present a clear, side-by-side comparison of single-phase and two-phase direct-to-chip cooling, outlining the performance characteristics, operational challenges, and tradeoffs associated with each approach. While single-phase cooling offers substantial advantages, it requires careful integration and presents a new set of constraints. Rather than focusing solely on how much power is “too much,” this discussion will explore a broader theme: Which emerging pain points will ultimately drive the industry to shift its cooling strategy again?

Milad Samie — CoolIT Systems

Biography: Milad Samie, PhD, is a Senior R&D Specialist at CoolIT Systems, specializing in thermal management and rapid prototyping. For the past four years, he has been a member of the Advanced Technology Group, where he has worked on developing novel cooling solutions for electronics and data centers. Before joining CoolIT Systems, Milad earned his PhD from the University of Melbourne, focusing on turbulent flows, and subsequently held a postdoctoral research position at Queen's University.

Presentation abstract: As AI servers approach 1 MW power level, achieving near-100% heat capture through liquid cooling introduces challenges that extend well beyond cold-plate performance. At the server level, the need to cool an increasing number of components creates significant weight and material constraints. Incorporating lightweight materials such as aluminum can help address these challenges, but the use of wetted aluminum alongside copper introduces concerns around galvanic corrosion, coolant chemistry, and long-term reliability. At the chip level, a

different set of thermal challenges emerges. Increasing coolant velocity can enhance cold-plate heat transfer, but may also increase pressure drop, pumping power, and the potential for erosioncorrosion. Furthermore, as cold-plate thermal performance improves, the thermal interface material (TIM) can represent an increasingly significant portion of the chip-to-coolant thermal resistance. This presentation highlights these interconnected challenges and discusses research opportunities in materials, flow management, thermal interfaces, and system-level design for next-generation liquid-cooled servers.

Utkarsh Charapale — Vertiv

Biography: Utkarsh Charapale is a dynamic leader with extensive experience coordinating global teams and driving Emerging Technology Needs (ETN) advancements. In his position he has forged numerous strategic partnerships with universities and research organizations and managed advanced technology collaborations. He has secured federal grants and aligned ETNs with funding opportunities. He is passionate about open innovation.

Panel topic: As the rack becomes the new computer, we must move beyond component-level optimization toward system-level integration of cooling, controls, power delivery, and facility infrastructure. I will discuss the challenges posed by increasingly dynamic and non-uniform AI workloads, the innovations needed to support future 500 kW–1 MW racks, and the importance of looking ahead to Horizon 3 technologies—including advanced cooling architectures, AI-driven thermal controls, new materials, and potentially cryogenic computing infrastructure.

Panel 3: Two-Phase Cooling System for Electronics

Date, time, and room: Thursday, October 29, 2026 | 9:30 AM–11:00 AM | Rio Vista Salon G/H

Moderator: Dr. Raffaele Luca Amalfi, CEO, SEGUENTE, Inc.

Moderator biography: Dr. Raffaele Luca Amalfi is the CEO and Co-Founder of SEGUENTE Inc., considered an Innovator, visionary, and industry influencer driving Seguento's strategic business, technology & product roadmap, capital objectives, and growth goals. Prior founding SEGUENTE, he had strategic roles in large corporate companies, leading R&D and commercialization activities in the field of thermal management, and advanced liquid-cooling technologies of high-performance communications and computing systems. He authored over 75 scientific publications in leading journals, conference proceedings, and handbooks, and 20 patents. Dr. Amalfi is the Secretary of the ASME K-16 Heat Transfer Committee, Member of the OCP Heat Reuse Steering Committee, former Guest Editor for the ASME Journal of Electronic Packaging, and recipient of numerous awards.

Panel abstract: The rapid growth of AI, HPC, and next-generation data center architectures is driving heat loads beyond the practical limits of conventional cooling technologies. Two-phase direct-to-chip cooling is emerging as a leading solution, offering superior heat transfer performance, higher efficiency, and the ability to support future high-density compute platforms. This panel brings together experts from across the two-phase cooling ecosystem to discuss the technology's advantages, key design considerations, and deployment strategies. Attendees will gain insights into how two-phase cooling can enable the next generation of AI infrastructure while improving performance, efficiency, and scalability.

Confirmed panelists: Dr. Arielle Gamboa, Solstice; Dr. Jimil Shah, ThermInfra; Dr. Solomon Adera, University of Michigan; Dr. Victor Chiriack, Global Cooling Technology Group.

Dr. Arielle Gamboa — Biography: Gamboa is a Senior Advanced R&D Engineer/Scientist at Solstice. [SOURCE BIOGRAPHY HAS MISSING TEXT BEFORE THE FOLLOWING FRAGMENT.] Science and Engineering from the University of Illinois Urbana-Champaign, where her research focused on advanced thermal sciences and energy transport. Her technical background includes thermal-fluid sciences, materials research, and engineering innovation.

Dr. Jimil M. Shah — ThermInfra — Biography: Dr. Jimil M. Shah is an internationally recognized thermal engineering leader specializing in liquid cooling technologies for AI, hyperscale, and high-performance computing infrastructure. Over the past decade, he has contributed to the advancement of immersion cooling, direct-to-chip cooling, and next-

generation thermal management solutions that enable higher computing density, improved energy efficiency, and greater infrastructure reliability. Before founding ThermInfra, Dr. Shah served as Senior Director of Immersion Cooling at MARA Holdings, where he led engineering initiatives supporting large-scale AI infrastructure and advanced liquid cooling technologies. Earlier leadership roles at TMGcore, 3M, and an AI infrastructure startup gave him broad experience spanning research, product development, manufacturing, commercialization, and customer deployment.

Dr. Solomon Adera — Biography: Dr. Solomon Adera earned his PhD in Mechanical Engineering from MIT in 2016. He was a Postdoctoral Associate in the School of Engineering and Applied Sciences at Harvard University from 2017–2019. Currently, he is an Assistant Professor in Mechanical Engineering at the University of Michigan. His research interests include surface wettability, droplets and bubbles, micro/nano-structuring, fluid mechanics, thermal management, phase change heat transfer, such as evaporation, condensation, and freezing.

Dr. Victor Chiriac — Global Cooling Technology Group — Biography: Dr. Victor Chiriac is an ASME Fellow, CEO and Managing Director of Global Cooling Technology Group, LLC. Held technology and engineering leadership roles, led corporate thermal technology teams and roadmaps, worked on leading-edge wireless technologies with Motorola (1999–2010), Qualcomm (2010–2018) and Futurewei USA (2018–2019). Elected Chair of the ASME K-16 Electronics Cooling Committee in 2015 and the Arizona and New Mexico IMAPS (International Microelectronics and Packaging Society) Chapter President in 2010. Co-editor of Electronics Cooling Magazine since 2016 and leading member of the organizing committees of ASME/InterPack, IMECE and IEEE/Therm. 27 U.S. and International issued patents, 2 US Trade Secrets, 1 US Defensive Publication and 117 papers in scientific journals and at conferences. Recipient of the ASME K-16 Clock award in 2018 for “scientific contributions and leadership in promoting best thermal management of electronics engineering practices”. Diamond Innovation and Technology Leadership Awards at Qualcomm in 2016–2017, and the Corporate Award for Technology Innovation at Motorola in 2002. PhD (1999) in Aerospace and Mechanical Engineering, University of Arizona, Tucson, USA.

Panel 4: Mechanics for Electronics

Date, time, and room: Tuesday, October 27, 2026 | 11:15 AM–12:45 PM | Rio Vista Salon G/H

Moderator: Dr. Ross Wilcoxon, Senior Technical Fellow, Collins Aerospace

Moderator biography: Ross Wilcoxon is a Senior Technical Fellow with Collins Aerospace in Cedar Rapids, Iowa, USA. He conducts research and supports product development in the areas of thermal management, reliability and electronics packaging technologies for avionics systems. He is an editor of Electronics Cooling Magazine and received the SEMI-THERM Symposium Thermi Award in 2021. Prior to joining Collins in 1998, he was an assistant professor of mechanical engineering at S. Dakota State University.

Panel abstract: Mechanical design goes hand in hand with thermal design to ensure that systems meet performance requirements and operate reliably. This panel will discuss a wide range of mechanical issues ranging components to systems, how a variety of mechanical design tools can be integrated to improve design processes, and how new advances in AI/machine learning will influence these mechanical design approaches and decisions.

Confirmed panelists: F. Patrick McCluskey, Professor, University of Maryland, College Park; Thomas (Tom) Primosch, Senior Principal Engineer and Hardware Discipline Chief, Collins Aerospace; Dr. Ram Ranjan, Thermal Systems Architect, Google.

F. Patrick McCluskey — Biography: Dr. Patrick McCluskey is a full Professor and the Associate Chair for Research and Administration in the Mechanical Engineering Department at the University of Maryland, College Park. He has over 30 years of research experience in the areas of electronic materials, thermal management, reliability, and packaging of electronic systems for use in extreme temperature environments and power applications. Dr. McCluskey has co-authored three books, 5 US Patents, and nearly 200 peer-reviewed technical articles with over

5000 citations. He is an associate editor of the IEEE Transactions on Components, Packaging, and Manufacturing Technology; general chair of the IMAPS High Temperature Electronics Conference; Awards Director and a member of the board of governors of the IEEE Electronic Packaging Society; and a fellow and former member of the Executive Council of IMAPS.

Thomas (Tom) Primosch — Biography: Mr. Tom Primosch has 26 years of experience designing and analyzing spaceborne, airborne, and ground-based optic systems and near eye AR and VR displays. He specializes in integrating digital product development across CAD and CAE tools. He holds a Masters degree in Mechanical Engineering from University of California, San Diego.

Ram Ranjan — Biography: Dr. Ram Ranjan leads thermal system design and development for AI hardware at Google. Before joining Google in 2026, he spent 15 years at RTX, across Collins Aerospace and RTX Technology Research Center. He served as Director of Advanced Technology and Systems Engineering for aircraft propulsion, power, and thermal management. Dr. Ranjan holds Ph.D. in Mechanical Engineering from Purdue University, 50+ issued U.S. patents, over 25 peer-reviewed publications.

Panel 5: Advances in Reliability from packaging to data center cooling facility

Date, time, and room: Thursday, October 29, 2026 | 11:15 AM–12:45 PM | Rio Vista Salon F

Moderator: Dr. Yogesh Fulpagare, UT Arlington

Moderator biography: Dr. Yogesh Fulpagare is an Assistant Professor in the Department of Mechanical and Aerospace Engineering at the University of Texas at Arlington. His research focuses on thermal management and reliability of high-performance electronics and data centers, including direct-to-chip liquid cooling, advanced cold plates, and AI-driven cooling systems. Before UTA, he served as Deputy Chief Engineer at Cooler Master Corporation Taiwan and held postdoctoral research positions at the National University of Singapore and National Yang Ming Chiao Tung University Taiwan. Ph.D. in Mechanical Engineering from IIT Gandhinagar with a research collaboration at Georgia Tech USA.

Panel abstract: The rapid growth of artificial intelligence and high-performance computing by expanding data center infrastructure is introducing new reliability challenges across electronic packages, thermal interfaces, cold plates, and fluid-distribution systems. This panel will bring together experts from academia and industry to discuss advances in failure analysis, qualification testing, physics-based modeling, and real-time health monitoring. Particular attention will be given to the interactions among thermal, mechanical, material, and fluid-related failure mechanisms. The panel will identify critical research needs and practical strategies for developing reliable and sustainable next-generation computing systems.

Confirmed panelists: Prof. Dereje Agonafer, Presidential Distinguished Professor, University of Texas at Arlington; Dr. Utkarsh Charpale, Technology Innovation Manager, Vertiv [NAME SPELLING TO CONFIRM: biography uses Utkarsh Charapale]; Dr. Saket Karajgikar, Senior Engineering Manager, NVIDIA; Prof. Tiwei Wei, Assistant Professor, UCLA.

Dr. Dereje Agonafer — Biography: Dr. Dereje Agonafer is a member of the National Academy of Engineering and a Distinguished University Professor of Mechanical Engineering at The University of Texas at Arlington. He directs the Electronics, MEMS and Nanoelectronics Systems Packaging Center and serves as Site Director of the NSF IUCRC for Energy-Smart Electronic Systems. Before joining UTA in 1999, he worked at IBM, where he received the IBM Outstanding Technical Achievement Award for his contributions to computer-aided thermal modeling. An internationally recognized expert in data-center cooling, electronics thermal management, and advanced packaging, Dr. Agonafer has mentored more than 250 students, holds nine U.S. and six foreign patents, and has published more

than 230 papers, two books, and several book chapters. He is a Fellow of ASME and the American Association for the Advancement of Science. His many honors include the THERMI Award, InterPACK Excellence Award, NSBE Golden Torch Award, IThERM Achievement Award, and ASME Heat Transfer Memorial Award. He was also a Dr. Martin Luther King Jr. Visiting Professor at MIT and has served on scientific and academic advisory boards at several leading universities.

Dr. Saket Karajgikar — Biography: Dr. Saket Karajgikar is a Senior Engineering Manager at NVIDIA and an ASME Fellow specializing in thermal management and mechanical validation of advanced electronic systems. His expertise spans electronics packaging, data-center cooling, computational fluid dynamics, and the design and validation of servers, racks, and largescale AI infrastructure. Before joining NVIDIA, he held engineering leadership roles at Meta and Hyve Solutions. Dr. Karajgikar has received numerous professional recognitions for his contributions to electronics cooling and has held prominent leadership positions within the ASME InterPACK community, including serving as General Chair of InterPACK 2025. He earned his Ph.D. in Mechanical Engineering from The University of Texas at Arlington.

Utkarsh Charapale — Biography: Utkarsh Charapale is a Technology Innovation Manager at Vertiv, specializing in liquid cooling, sustainable data-center infrastructure, computational fluid dynamics, and thermal management. He leads emerging-technology initiatives, coordinates global technical teams, and develops strategic collaborations with universities, research organizations, and industry partners. His experience includes data-center thermal analysis, advanced cooling technologies, federal research initiatives, and the translation of innovative concepts into commercially deployable solutions. He is an inventor and supports industry-academic partnerships focused on reliable, scalable, and energyefficient infrastructure for next-gen AI data centers. He gained experience in fluid and thermal sciences at Cummins Turbo Technologies and Forbes Marshall. Master's degree in CAD from VIT University and a bachelor's degree in mechanical engineering from Shivaji University India.

Dr. Tiwei Wei — Biography: Dr. Tiwei Wei (Senior Member, IEEE) is an Assistant Professor in the Department of Mechanical and Aerospace Engineering at UCLA and Associate Director of the UCLA Center for Heterogeneous Integration and Performance Scaling (CHIPS). Before UCLA, he was an Assistant Professor at Purdue University (2022–2025) and conducted postdoctoral research at Stanford University's NanoHeat Lab. Ph.D. in Applied Mechanics and Energy Conversion (TME) with additional training in 3D System Integration at IMEC and KU Leuven in Belgium. Dr. Wei's research focuses on advanced semiconductor packaging manufacturing and thermal integration technologies. He is the recipient of the 2026 IEEE Electronics Packaging Society Exceptional Technical Achievement Award, 2025 ASME Electronic and Photonic Packaging Division (EPPD) Early Career Engineer Award, IEEE EPS 2025 Regional Contributions Award, the 2024 Intel Rising Star Faculty Award, and the 2020 imec Ph.D. Excellence Award. He also serves as an Associate Editor for Microelectronics Reliability, IEEE TCPMT, and ASME JEP, and has held key leadership roles in the IEEE EPS community, including General Chair of the 2024 IEEE EPS REPP (Reliability for Electronics and Photonics Packaging) symposium, Chair for IEEE EPS Technical Committee on Reliability, Assistant Chair for IEEE ECTC Interconnections Committee.

Presentation title: Reliability of Chip–Package Interactions: Design, Fabrication, and Experimental Characterization

Presentation abstract: Advanced semiconductor packages involve increasingly complex interactions between chips, interconnects, bonding interfaces, and packaging materials. These interactions can generate local thermo-mechanical stresses that affect device and package reliability. This presentation will discuss our recent work on the design, fabrication, and experimental characterization of TSVs and Cu–Cu bonding structures. For TSVs, we combine Raman stress mapping and electron backscatter diffraction (EBSD) to examine how Cu grain structure and its

effective mechanical properties affect the residual stress in surrounding Si. For Cu–Cu bonding, we developed a Raman-based approach to directly measure bonding-induced stress in the TSV keep-out zone and examined its dependence on bonding conditions. These results show how material microstructure, bonding processes, and package design can affect local stress and, consequently, the reliability of interconnects and nearby devices. The presentation will highlight the role of experimental stress characterization in understanding and improving the reliability of advanced 3D packages.

Panel 6: AI, Simulation, and the Future of Thermal Engineering: Practical Applications from Chips to Data Centers

Date, time, and room: Thursday, October 29, 2026 | 2:00 PM–3:30 PM | Rio Vista Salon G/H

Moderator: Dr. Vishal Talari, Synopsys

Moderator biography: Vishal Talari is a Senior Application Engineer at Synopsys, supporting the Ansys Icepak product line focusing on electronics cooling, CFD, advanced thermal management architecture. He works closely with industry partners to solve critical thermal challenges across chip/package/system-level applications, optimizing high-fidelity simulation workflows for modern computing hardware. Ph.D. from the University of Houston, focusing on advanced thermal transport and multi-phase cooling mechanisms, followed by postdoctoral research at the University of Texas at Arlington investigating chip-to-system thermal architectures. Combining fundamental research with simulation expertise, he drives thermal modeling best practices for emerging technologies across AI hardware, data centers, and advanced packaging.

Panel abstract: From advanced electronics to hyperscale data centers, thermal management is becoming increasingly complex while design cycles continue to shrink. This panel explores how AI and simulation are combined to address these challenges, highlighting real-world applications, emerging best practices, and future opportunities. Discussion topics include AI-driven design exploration, digital twins, predictive thermal analytics, cooling optimization, and next-generation engineering workflows that integrate machine intelligence with physics-based modeling.

Confirmed panelists: Dr. Rajiv Mongia, Senior Principal Engineer, Intel; Kiran Gavini, Senior Staff R&D Engineer, Synopsys; Prof. Aparna Chandramowlishwaran, University of California, Irvine; Gautham Ramchandran, Manager, Gamma Technologies; Dr. Julian Castillo Chacon, Senior Engineer, Qualcomm; Adrian Zebrowski, Meta.

Rajiv Mongia — Senior Principal Engineer, Intel

Biography: Rajiv Mongia is a Senior Principal Engineer and Chief Thermal Architect for Client and Physical AI Solutions at Intel, where he leads thermal strategy across silicon, advanced packaging, and systems for next-generation computing. With more than 25 years of experience spanning heat transfer, fluid mechanics, electronic packaging, and energy systems, he has developed thermal solutions for AI and high-performance computing hardware, FPGAs, client platforms, and data centers, guiding interdisciplinary teams from early research through high-volume product delivery. He holds a Ph.D. and M.S. in Mechanical Engineering from the University of California, Berkeley, and a B.S. in Mechanical Engineering from Purdue University.

Presentation title: AI May Solve Navier–Stokes—But Thermal Engineers Are Still Cool

Presentation abstract: From the abacus and ENIAC to personal computers, CFD, and today's AI, every leap in computational capability has changed how engineers work and made them more efficient—not made engineers obsolete. Even as recent AI advances in solving Navier–Stokes problems signal remarkable progress, the thermal innovations needed to sustain Moore's Law will still depend on engineers who understand the fundamentals, ask the right questions, challenge bad assumptions, and interpret results in context. This panel will explore how AI can make thermal engineers faster and more capable without replacing engineering judgment—because no matter how confident the directions sound, you still should not follow a navigation app into a lake.

Kiran Gavini — Senior Staff R&D Engineer, Synopsys

Biography: Kiran Gavini is a Senior Staff R&D Engineer at Synopsys, leading the software development for Icepak. His work is focused on performance optimization, Surrogate modeling, GPU-based solver development, and the implementation of MCP servers and simulation agents. He holds an M.S. in Electrical Engineering from the University of Missouri-Kansas City and a bachelor's degree in Electronics and Communication from SRM University, India.

Presentation title: Shift in Engineering Simulation: From Automation to Agentic Workflows.

Presentation abstract: In electronic design automation and high-performance simulation software, development and engineering teams face challenges to come up with user-friendly workflow and debugging industrial models. Traditional script-based automation is helpful to reduce time for known workflows, but they do not remove the foundational bottlenecks across the end-to-end workflow—such as complex geometry handling, meshing preparation, learning APIs required for automation, and managing multi-product environments. Agents are helpful to bridge this gap, transforming how developers and users interact with complex codebases and simulation solvers. Unlike basic utility tools or earlier implementations like Synopsys GPT—which primarily focused on querying documentation or retrieving static information, modern agentic frameworks are far more complex and capable. Furthermore, leveraging large language models and agents has made brainstorming new approaches to improve solvers, optimize parameters, and streamline design workflows faster and simpler. This presentation examines how agentic frameworks are shifting the simulation industry from rigid scripting to intelligent, agent-driven engineering. We will address how AI agents assist software teams in debugging meshing issues, and accelerating development cycles, complemented by demonstrations of these agentic workflows in various use cases.

Prof. Aparna Chandramowlishwaran — University of California, Irvine

Biography: Aparna Chandramowlishwaran is a Professor at the University of California, Irvine, in Electrical Engineering and Computer Science. She received her PhD in Computational Science and Engineering from Georgia Tech and was a research scientist at MIT prior to joining UCI. Her research focuses on scientific machine learning. Her group develops neural operators, transformer-based surrogate models, and foundation models that learn the structure of physical systems. A growing research direction explores the mechanistic interpretability of these models, seeking to understand the representations and computations they learn. Her group draws on a background in high-performance computing to develop efficient algorithms and implementations that let these models run at the scale and speed practical applications require. She currently serves as the associate editor of the ACM Transactions on AI for Science.

Presentation title: Beyond AI Surrogates: From Predicting Designs to Discovering Them

Presentation abstract: AI surrogates are beginning to replace expensive simulations, making large engineering design spaces computationally tractable. But replacing simulation one evaluation at a time is only the first stage of a larger transformation. The more consequential opportunity is to move from predicting the performance of designs we specify to discovering designs we would not have thought to specify in the first place. My view is that the next generation of AI for thermal engineering should combine learned models of physical systems with engineering objectives and constraints to actively search the design space.

Gautham Ramchandran — Manager, Gamma Technologies

Biography: Gautham leads Solutions Consulting for North America at Gamma Technologies, specializing in tailoring GT's multi-physics systems simulation solutions to address and deliver value across industry's digital engineering requirements from product development to deployment across data centers, HVACR, mobility, industrial machinery, and power generation. He has been at GT for 10 years, starting as a Thermal-Fluids application expert after graduating with a master's degree in mechanical engineering from Purdue University.

Presentation title: Accelerating Data Center Systems Optimization with AI-Enabled "Phygital" Twins

Presentation abstract: Data center thermal systems have grown too large, too interdependent, and too fastmoving to fully validate through physical testing alone. The scenarios that matter most, like extreme loads or cascading failures, are often the ones too costly or too risky to create on real hardware. This talk makes the case for the virtual test bench as the answer: a multi-scale, multifidelity simulation environment that lets engineers zoom from a single cold plate out to a full facility model without losing the first-principles ground truth that ties thermal, power, and

controls together as one coupled system. We'll then look at how AI accelerates that environment in two distinct ways — machine learning models that compress large design-of-experiments studies and fault-detection workflows from days into minutes, and generative AI that builds and executes simulation models with less manual setup, further compounding the speed gain. Together, physics-anchored simulation and AI acceleration aren't just about answering faster — they expand what's even worth exploring, opening the door to technologies and topologies that time constraints would otherwise rule out.

Dr. Julian Castillo Chacon — Senior Engineer, Qualcomm

Biography: Julian Castillo is a thermal engineer and AI innovator whose work bridges physics-based modeling, data science, and intelligent engineering automation. At Qualcomm, his work spans semiconductor/package and system-level thermal engineering, with a focus on integrating high-fidelity simulation and experimental data with surrogate modeling, AI-ready engineering data, automated modeling and simulation, design-space exploration, optimization, and generative and agentic AI workflows. These efforts aim to accelerate engineering analysis while preserving physical rigor, traceability, and expert judgment. Julian holds Ph.D. and M.S. degrees in Mechanical Engineering from Purdue University and a B.S. in Mechanical Engineering from Universidad del Valle. His academic research encompasses micro- and nanoscale heat and mass transfer, transport and phase-change phenomena, dropwise condensation, droplet freezing and solidification, surface engineering, polymeric and fuel-cell-related materials, and the development of experimental, analytical, reduced-order, numerical, and CFD-based models.

Presentation title: From Thermal Models to Trusted Decisions: Physics-Grounded AI for Semiconductor Cooling—from 3D ICs to Data Centers

Presentation abstract: Rising power density, heterogeneous integration, and 3D stacking are transforming thermal management from a component-level analysis into a continuously coupled challenge spanning the die, package, system, rack, and facility. This presentation argues that AI's most credible near-term value is not replacing validated physics-based simulation or experimental characterization, but compressing the loop from data and models to engineering decisions. Reduced-order, surrogate, physics-informed, and operator-learning models can provide rapid thermal-field estimates and enable broader design-space exploration when they are trained, validated, and used within explicit applicability domains. Digital twins can connect these fast models with high-fidelity simulation, telemetry, workload and power data, state estimation, and periodic recalibration to support hotspot prediction, cooling optimization, and lifecycle learning. Agentic AI adds a different capability: orchestrating approved engineering knowledge and simulation tools, monitoring execution, recovering from workflow failures, and assembling traceable evidence for review. The central requirement is trust by design—physics constraints, uncertainty quantification, out-of-distribution detection, data and model provenance, drift monitoring, validation against simulation and experiments, and human approval for consequential decisions. Together, these capabilities can help engineers address 3DIC hotspots, liquid-cooling complexity, and multi-objective tradeoffs among performance, reliability, energy, water, carbon, and infrastructure constraints—while keeping engineering judgment and accountability where they belong.

Adrian Zebrowski — Meta

Biography: Adrian Zebrowski is a Senior Hardware Thermal Engineer at Meta, working on AI platforms, air-assisted liquid cooling (AALC) systems, and advanced single-phase cold plates. He was previously a Principal Thermal Engineer at Northrop Grumman, modeling quantum electronic devices at cryogenic temperatures, and a Thermal Analyst at Holtec International, performing CFD analysis of small modular reactor systems and spent nuclear fuel storage. He holds an MS in Aerospace Engineering and a BS in Mechanical and Aerospace Engineering from the University at Buffalo.

Presentation title: AI-Augmented Thermal Simulation: Workflow Bottlenecks, Agentic Capability Gaps, and the Need for Evaluation Standards

Presentation abstract: In thermal simulation, most engineering time goes to geometry preparation, meshing, model setup, postprocessing, and extracting useful conclusions. This holds from a single cold plate to a rack-scale simulation. The workflow, not the solver, is the bottleneck on engineer time. AI development in this space has

concentrated on surrogate and reduced-order models, which accelerate the solve, and on topology optimization and generative design, which automate design exploration. Both are useful tools, but neither shortens the workflow around them. Agentic control of the end-to-end workflow is a separate line of development that can advance in parallel. The engineer directs the work in natural language, or supervises a semi-autonomous run and intervenes where engineering judgment is required. Public demonstrations of such augmented workflows remain sparse, and mostly on canonical problems rather than complex geometries representative of industrial applications. Evaluating those claims is harder than checking accuracy. Software engineering evaluates its AI tools against public benchmarks; thermal engineering has none, so we built our own problems from production workflows to test what vendors offered. The claim being tested is engineering effort, not solver accuracy. Effort cannot be measured from submitted results alone, so an evaluation has to capture how the work was actually done. Aligning on common benchmark problems and evaluation standards will take hyperscalers, other industrial users, and academic groups defining representative problems together, with tool developers demonstrating their workflows against them.



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Synthetic diamond volume fraction (%)	45±5	35±5
Bulk thermal conductivity at 300 K ($\text{W m}^{-1} \text{K}^{-1}$)	~1000	~800
Coefficient of thermal expansion (CTE) at 300 K (ppm K^{-1})	7.2	8.5
Minimum thickness (mm)	2.0	0.7

*Overall thermal conductivity depends on the upper and lower copper skin thickness



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2	Data Center, Modular Edge Systems, and Information Storage Systems	Pardeep Shahi	Lingnan Lin Takehiko Eguchi Qilong Cheng Naimish Pandya
3	Electronic Packaging for Extreme Environments	Patrick McCluskey	Nakul Kothari Jinesh Narangaparambil Sven Rzepka
4	Power/RF Electronics and Photonics	Georges Pavlidis	Hyoungsoon Lee Jong Eun Ryu Winston Zhang
5	Nanoscale Heat Transfer, Multiscale Thermal Transport and Energy Storage	Jorge Padilla	Ashutosh Giri Qilong Cheng Xiangyu L
6	Flexible, Wearable and Printed Electronics	Jorge Cardenas	Pradeep Lall Vivek Elashoff Benjamin Leever
7	Intelligent Modeling, Simulation, and Automation Systems	Lingnan Lin	Hedong Zhang Jia-Yang Juang
8	Interactive Presentations	Georges Pavlidis	Yunseo Kim Prasanna Jayaramu
9	Micro/Nano Mechatronics, Microelectronics, Microelectrochemical Systems, and Applications of the Internet of Things	Shintaro Itoh	Shaomin Xiong Jia-Yang Juang
10	Panels, Tutorials, and Workshops	Victor Chiriac	Raffaele Luca Amalfi Yogesh Fulpagare Vishal Talari

Presenter Attendance Policy

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For each Technical Publication, Technical Presentation, or Poster, at least one author must register at the appropriate member or non-member rate based on membership status, including member, non-member, student member, student non-member, or life member.

One author registration may cover a maximum of two technical papers or presentation-only submissions, plus two additional poster presentations. An author with more than two technical papers or presentation-only submissions scheduled for podium presentation must arrange for a co-author to register.

Student Registration Eligibility

Student registration rates are available only to full-time undergraduate and graduate students who have not yet received a Ph.D. Postdoctoral researchers may not register as students. Proof of student status is required and must consist of a copy of the student identification card or a letter from the institution's registrar verifying student status.

Attendees who pay the non-member registration rate will be offered a one-time complimentary four-month ASME trial membership following the conference.

Presenter Attendance and Archival Publication

Under the ASME Presenter Attendance Policy, a paper that is not presented at the conference by an author or co-author will not be published in the official archival proceedings, which are registered with the Library of Congress and abstracted and indexed.

Technical conferences are scheduled as in-person events. Video or Zoom presentations are not a substitute for an in-person presentation.

COVID-19 Requirements

ASME in-person activities will follow all state and local laws, regulations, and guidelines regarding COVID-19 that apply to the event location. Requirements are subject to change and should be monitored regularly.

Accessibility and Accommodation Assistance

InterPACK and ASME are committed to providing an inclusive experience. If you have accessibility needs, including mobility, hearing, vision, or neurodiversity accommodations, or dietary requirements, please indicate them during registration or contact the conference team so arrangements can be made in advance.

Accessible Guest Rooms and Bathrooms

Mobility-accessible rooms: Select rooms offer either roll-in showers or accessible bathtubs.

Hearing-accessible rooms: Available features include visual alarms and notification devices for doors and incoming phone calls.

Property and Public Areas

Wheelchair access: Common entrances and interior paths are wheelchair-accessible.

Meeting and event spaces: The hotel's 31,000 square feet of meeting and event space, including 17 rooms and the Grand Ballroom, is arranged on a single level for easier navigation.

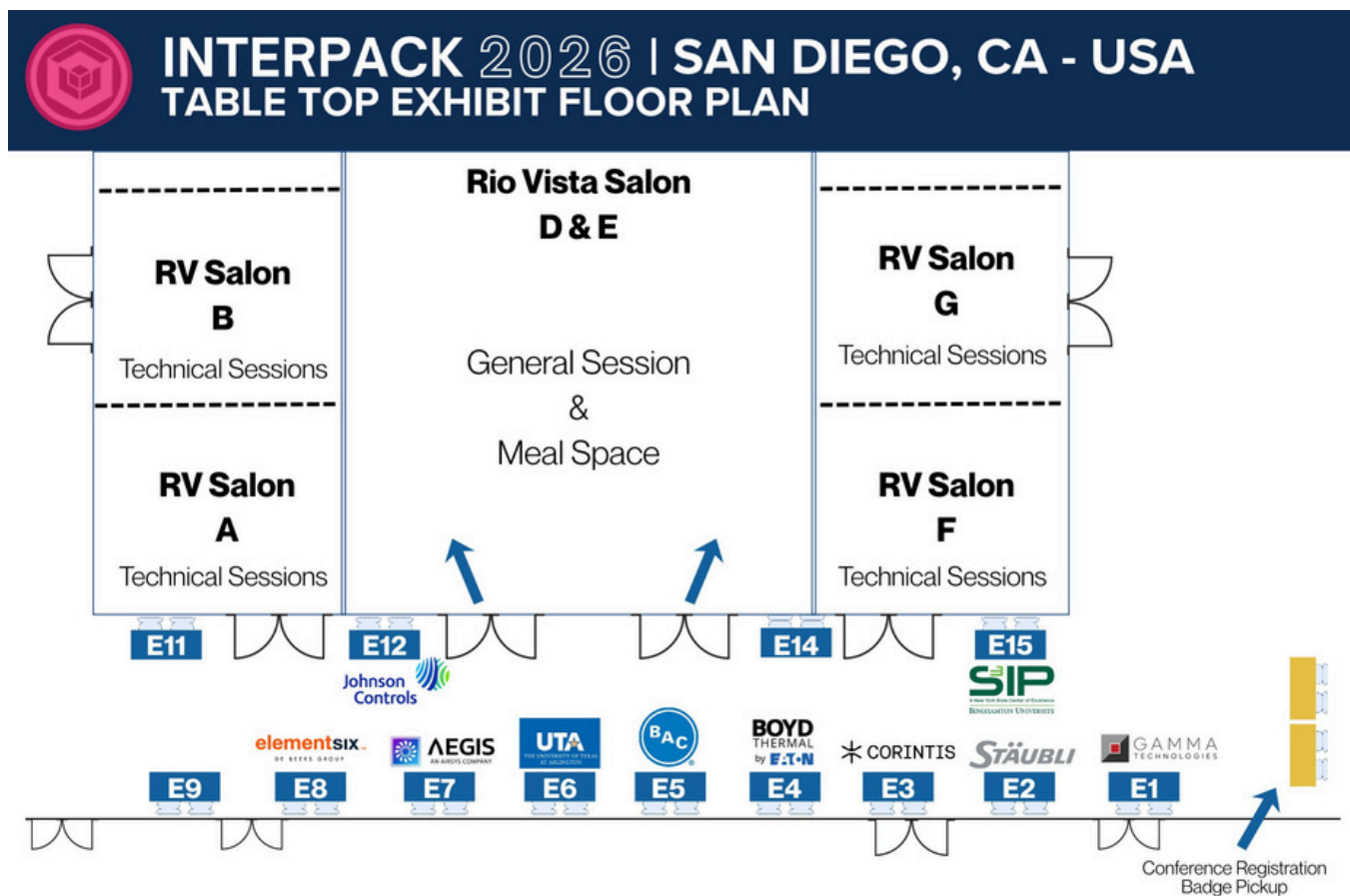
Pool: An aquatic lift is available at the outdoor pool.

Maps and Floor Plans

ConferenceRoom Directory

Function	Room / Level
Registration	Rio Vista Salon Foyer
Plenary and Award Lunches	Rio Vista Salon D/E
Technical Sessions	Rio Vista Salon Rooms A, B,C, F
Exhibits and Breaks	Rio Vista Salon Foyer
Speaker Ready Room	Balboa 1/2
Committee Meetings	Balboa 1/2

Exhibit Floor Plan



Important Links and Contacts

Resource	Link or Contact
Conference website	https://event.asme.org/InterPACK
Venue and travel	https://www.marriott.com/en-us/hotels/sanmv-san-diego-marriott-mission-valley/overview/?scid=f2ae0541-1279-4f24-b197-a979c79310b0
Conference app	Apple App Store: https://apps.apple.com/us/app/asme-conferences/id1625655338 Google Play: https://play.google.com/store/apps/details?id=com.swapcard.apps.android.asmeconferences&hl=en_US
Proceedings support	conferencepubs@asme.org
Registration support	Come to the registration desk in the Rio Vista Salon Foyer on the ground level of the hotel
Presentation requirements	https://event.asme.org/InterPACK/Policies/Presentation-Requirements
Code of Conduct and Anti-Harassment Policy	https://event.asme.org/InterPACK/Policies/Code-of-Conduct-Anti-Harrassment
COVID-19 Policy	https://event.asme.org/InterPACK/Policies/COVID-19



InterPACK 2027

