

InterPACK 2026 PANELS

1) PANEL TITLE: “Thermal and Mechanical Challenges and Opportunities for Advanced Mobile, Wireless, AI, IoT, Automotive, and High-Power Computing Devices”

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



Bio: 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.

Confirmed Panel Members:

Eric Bert (President, Exentis AG USA)

Amy Marconnet (Professor, Purdue, USA)

Remco Van Erp (CEO, Corintis, Switzerland)

Yogendra Joshi (Ex Program Director, DARPA, Professor, Georgia Tech, USA)

Ross Wilcoxon (Senior Fellow, Collins Aerospace, USA)



Eric Bert (President, Exentis North America)

Bio: 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 Stratasys 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 screen-printing techniques combined with high-speed precision optics and industrial handling automation, Exentis has introduced a new, unique technology platform that enables cost-effective, 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)

Bio: 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 next-generation 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 to 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.



Dr. Remco van Erp (Corintis)

Bio: 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.

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 *Therminator* – a testbed with high-resolution programmable silicon TTVs to validate cooling performance with precision.



Prof Yogendra Joshi (Georgia Tech, Ex- Program Director, DARPA)

Bio: **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

Bio: **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.

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

PANEL MODERATORS:



Bio: Dr. Alfonso Ortega is the James R. Birlle 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.



Bio: 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 Panel Members:

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

PANELISTS



Bio: 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 Schiffres 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.



Bio: 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.



Bio: 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 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 co-authored 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, 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 erosion-corrosion. 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.

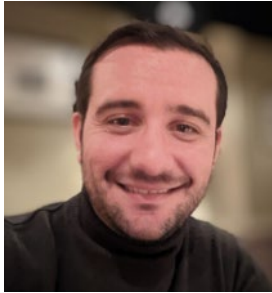


Utkarsh Charapale is a dynamic leader with extensive experience coordinating global teams and driving Emerging Technology Needs (ETN) advancements. In his position he has forged numerous strategic partnerships with universities and research organizations and managed advanced technology collaborations. 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.

3) PANEL TITLE: Two-Phase Cooling System for Electronics

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



Bio: Dr. Raffaele Luca Amalfi is the CEO and Co-Founder of SEGUENTE Inc., considered an Innovator, visionary, and industry influencer driving Segunte'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 Panel Members:

- 1) Dr. Arielle Gamboa (Solstice)
- 2) Dr. Jimil Shah (ThermInfra)
- 3) Dr. Solomon Adera (Michigan University)
- 4) Dr. Victor Chiriac (Global Cooling Technology Group)

1) Dr. Arielle Gamboa (Solstics Advanced Materials)



Bio: Gamboa is a Senior Advanced R&D Engineer/Scientist at Solstice 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.

2) Dr. Jimil Shah - Thermlnfra



Bio: 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 Thermlnfra, 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.

3) Dr. Solomon Adera



Bio: 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.

4) Dr. Victor Chiriac - Global Cooling Technology Group



Bio: 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.

4) PANEL TITLE: “Mechanics for Electronics”

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



Bio: 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 Panel Members:

F. Patrick McCluskey, Professor, University of Maryland, College Park

Tom Primosch), Senior Principal Engineer and Hardware Discipline Chief, Collins Aerospace

Dr. Ram Ranjan, Thermal Systems Architect, Google

PANELISTS: F. Patrick McCluskey, Professor, University of Maryland, College Park



Bio: 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), Senior Principal Engineer and Hardware Discipline Chief, Collins Aerospace

Bio: 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, Thermal Systems Architect, Google

Bio: 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

5) PANEL TITLE: “Advances in Reliability from packaging to data center cooling facility”

Panel Moderator: Dr. Yogesh Fulpagare (UT Arlington)



Bio: 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 Panel Members:

Prof. Dereje Agonafer (Presidential Distinguished Professor, University of Texas at Arlington)

Dr. Utkarsh Chorpale (Technology Innovation Manager, Vertiv)

Dr Saket Karajgikar (Sr. Engineering Manager, NVIDIA)

Prof. Tiwei Wei (Assistant Professor, UCLA)

PANELISTS:



Bio: 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

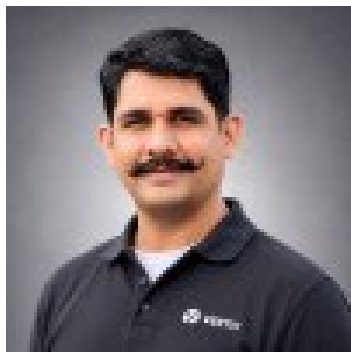
250 students, holds nine U.S. and six foreign patents, and has published more than 230 papers, two books, and several book chapters. He is a Fellow of ASME and the American Association for the Advancement of Science. His many honors include the THERMI Award, InterPACK Excellence Award, NSBE Golden Torch 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.

Presentation titles and abstracts: Forthcoming



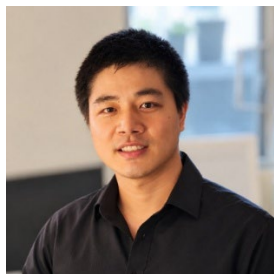
Dr. Saket Karajgikar is a Senior Engineering Manager at NVIDIA and an ASME Fellow specializing in thermal management and mechanical validation of advanced electronic systems. His expertise spans electronics packaging, data-center cooling, computational fluid dynamics, and the design and validation of servers, racks, and large-scale 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.



Bio: 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 energy-efficient 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.



Bio: 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 T-CPMT, 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

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.

6) PANEL TITLE: “AI, Simulation, and the Future of Thermal Engineering: Practical Applications from Chips to Data Centers”

Panel Moderator: Dr. Vishal Talari (Synopsys)



Bio: 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 Panel Members:

- Dr. Rajiv Mongia, Senior Principal Engineer, Intel
- Kiran Gavini, Senior Staff R&D Engineer, Synopsys
- Prof. Aparna Chandramowlishwaran, University of California, Irvine (UCI)
- Gautham Ramchandran, Manager, Gamma Technologies
- Dr. Julian Castillo Chacon, Senior Engineer, Qualcomm
- Adrian Zebrowski, META

PANELISTS: Rajiv Mongia, Senior Principal Engineer, Intel



Bio: 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.

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

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



Bio: 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 Chandramowliswaran, University of California, Irvine (UCI)



Bio: Aparna Chandramowliswaran 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



Bio: 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.

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

Abstract: Data center thermal systems have grown too large, too interdependent, and too fast-moving 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, multi-fidelity 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



Bio: 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 3D-IC 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



Bio: 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.

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

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 AI-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.
