# IMECE® 2026

## INTERNATIONAL MECHANICAL ENGINEERING CONGRESS & EXPOSITION®



# PROGRAM

**CONFERENCE**
NOVEMBER 8-12, 2026

**EXHIBITION**
NOVEMBER 9-11, 2026

**VANCOUVER CONVENTION CENTRE**
VANCOUVER, BRITISH COLUMBIA, CANADA

https://event.asme.org/IMECE

The American Society of Mechanical Engineers®
ASME®

ASME®
SETTING THE STANDARD

# WELCOME FROM THE CONFERENCE ORGANIZING COMMITTEE

Dear Distinguished Attendees,

It is a true pleasure to welcome you to ASME's International Mechanical Engineering Congress & Exposition (IMECE) 2026, in Vancouver, British Columbia. IMECE is a flagship event of ASME that brings together Mechanical Engineering community from across the globe representing academia, industry, and government to share advances in fundamental and applied research as well as technological advancements and innovations. It provides a platform for networking, sharing ideas and experiencing a broad vision of the mechanical engineering profession. This year's theme – "Advancing Global Solutions: Convergence to Transformative Impact" highlights the critical role mechanical engineers play in addressing global challenges through knowledge advancement and innovation.

This year's program includes over 230 technical sessions and poster presentations scheduled across 17 tracks and special symposia with presenters and attendees coming from over 45 countries across the globe. The program features two distinguished keynote speakers, John Ustica, President and CEO, Siemens Government Technologies and Dr. Mattia Giustiniano, Senior Vice President, West Product Development & Motorsport, Bridgestone. Both speakers will share their insight on factors influencing our profession in a broader context. This year's program also features a keynote panel on Artificial Intelligence (AI). AI is emerging as a disruptive tool that is impacting mechanical engineering profession. Our expert panel will unpack the real-world impact of AI across mechanical engineering disciplines—from the evolution of daily engineering tasks to the critical aspects of design, safety, security, and professional ethics in an automated era. In addition, there are six track-level panels and 27 plenary talks.

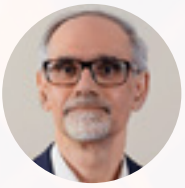
For students and early-career professionals, the Elevate ME program offers workshops, sessions, and networking opportunities designed to foster growth and innovation. A featured event is the ASME Rising Stars of Mechanical Engineering Showcase, which celebrates distinguished early-career researchers.

ASME Divisions also hosts many events at IMECE, which provide opportunities for conference attendees to learn about Divisions and to engage with Division activities. Please review details in the conference program.

We would like to sincerely thank our sponsors, volunteers and ASME staff whose contributions are vital to making this event a success.

On behalf of ASME, we thank you all for joining us at IMECE 2026 and making this conference a memorable and impactful event.

With warm regards,
**IMECE 2026 Organizing Committee:**



**Kamran Siddiqui**
*Western University*
*Conference Chair*



**Sekhar Rakurty**
*The M. K. Morse Company*
*Conference Co-Chair*



**Yousof Azizi**
*Bridgestone Americas*
*Technical Program Vice Chair*



**Linxia Gu**
*Florida Institute of Technology*
*Technical Program Vice Chair*



**Caterina Rizzi**
*Università degli Studi di Bergamo*
*Member at Large*



**Arun Muley**
*Boeing Research & Technology*
*Member at Large*



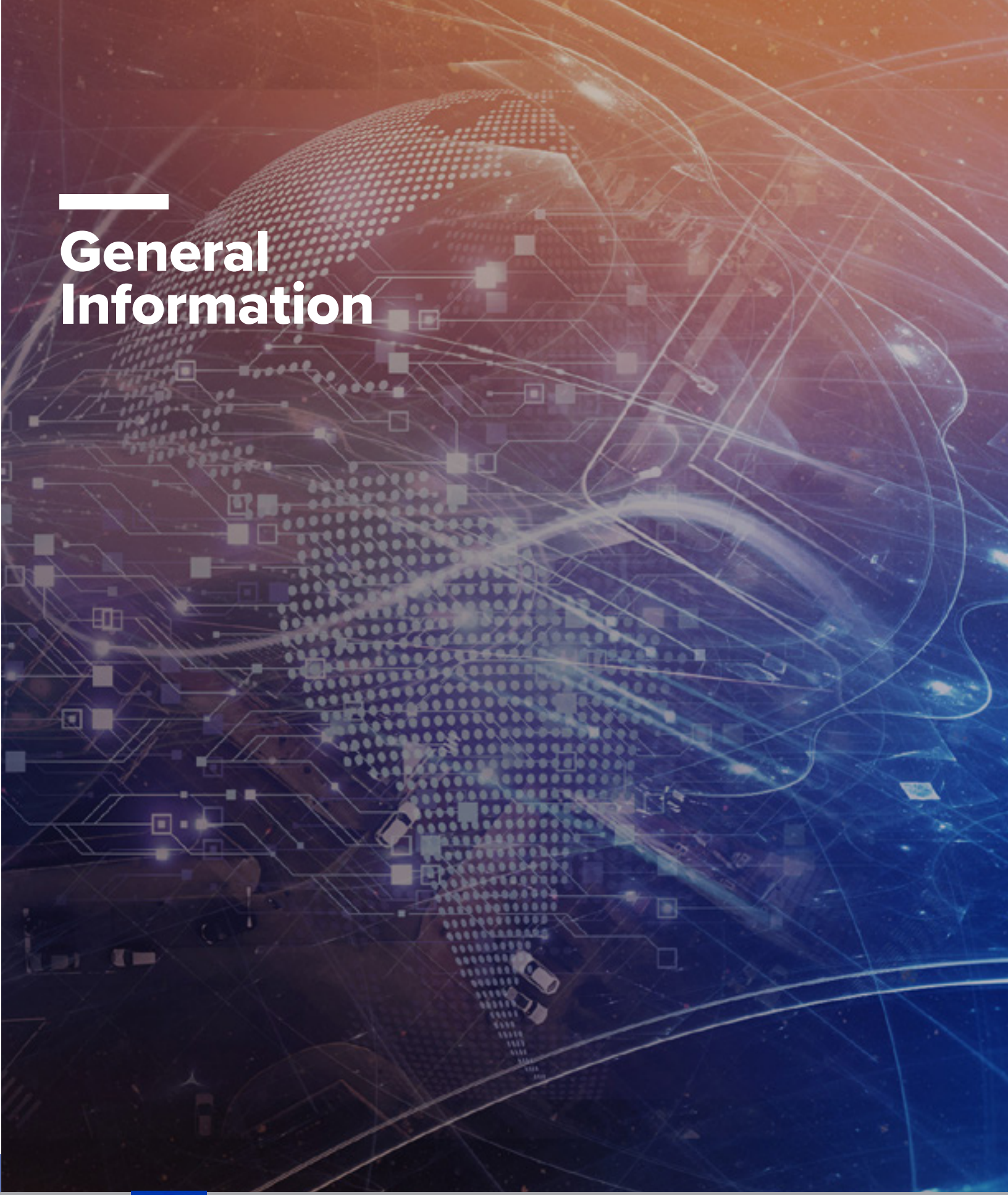
**Muhammad Al-Rawi**
*Charles Sturt University*
*Member at Large*



**Paul Witherell**
*NIST*
*Member at Large*

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# General Information



### ASME SWAPCARD APP

Download the ASME Conference App and hold the entire program in the palm of your hand! The ASME Conferences App allows you to easily look up sessions, search for abstracts or people, message with other attendees, and create your own schedule. An email with the login instructions was emailed to you. Be sure to download the app for the latest information.

## SPEAKERS

### SPEAKERS' PRACTICE ROOM

Room 105/106 on the 1st floor of the Convention Center is the Authors'/Speakers' Practice Room. The schedule is Monday–Thursday, November 9–November 12, 7:00AM–5:00PM (3pm Thursday). The room is equipped with two (2) LCD projectors, (2) laptop computers, and two (2) screens for authors/speakers to practice their presentations.

## AUDIOVISUAL EQUIPMENT IN SESSION ROOMS

All technical sessions are equipped with one LCD projector, one laptop, one screen, and a slide advance. You may bring your presentation on a USB flash drive and load it onto the laptop in the session room.

## BADGES ARE REQUIRED FOR ADMISSION TO ALL ACTIVITIES

All conference attendees must wear their official IMECE 2026 conference badge in order to gain admission to conference sessions/events/activities. No one will be admitted to any session unless they are registered and wearing a badge that shows the corresponding product (Full Day, Single Day if the session is on that day, Poster Session, etc.).

### SCANNING

All attendees are required to have their badge scanned before lunch functions. If your badge does not include lunch on a certain day, you will not be able to take part.

## CHILDCARE SERVICES

We are pleased to once again offer childcare reimbursement for attendees of IMECE 2026. For those who need childcare services, ASME will reimburse up $250 for services incurred by a licensed service provider in Memphis, TN. This offering will be available **November 9–12, 2026 between the hours of 8:00AM and 5:00PM.**

To be reimbursed, you must complete the ASME Volunteer Travel Expense Contribution form (found on the IMECE conference website under the "Venue/Travel" section). All requests for reimbursements must be received by ASME, with itemized receipts, no later than November 30, 2026.

If you have questions related to this benefit, please contact Krishna Hernandez at HernandezK@asme.org.

**NOTE:** ASME suggests you may wish to consult with your local hotel concierge for licensed service provider suggestions.

## COAT CHECK

There is a complimentary coat and bag check available on the 2nd floor at the Convention Center. Below is the date and time it will be available:

**Thursday, November 12** **7:30AM–3:00PM**

## CONTINENTAL BREAKFAST

Continental breakfast will be served on Monday, November 9 through Thursday, November 12 in the West Ballroom Foye.. Fully paid attendees are entitled to attend. The schedule is as follows:

| | |
|---|---|
| **Monday, November 9** | **7:30AM–8:00AM** |
| **Tuesday, November 10** | **7:30AM–8:00AM** |
| **Wednesday, November 11** | **7:30AM–8:00AM** |
| **Thursday, November 12** | **7:30AM–8:30AM** |

## EMERGENCY INFORMATION

Alert convention center staff by picking up a house phone to report a medical or security emergency. Describe the exact location of the incident and the nature of the emergency. Whenever an emergency situation is detected and announced, everyone is expected to evacuate the facility and safely assemble to the parking lots outside until the “All Clear” is given.

## EXHIBITS INFORMATION

The exhibits are located in East Hall on the 2nd floor of the Convention Center. The expo hall is your social hub! Be sure to visit the exhibitors and check out the poster sessions, sessions on the stage, and lounge. The exhibit hours are as follows:

| | |
|---|---|
| **Monday, November 9** | **12:00PM–7:00PM** |
| **Tuesday, November 10** | **12:00PM–4:00PM** |
| **Wednesday, November 11** | **12:00PM–4:30PM** |

## LUNCH

Convention Center. On Thursday, November 12, lunch is served in the East Ballroom. Fully paid attendees are entitled to attend.
The schedule is as follows:

| | | |
|---|---|---|
| **Monday, November 17** | **12:15PM–1:15PM** | |
| **Tuesday, November 18** | **12:15PM–1:15PM** | |
| **Wednesday, November 19** | **12:00PM–1:00PM** | |
| **Thursday, November 20** | **12:00PM–1:30PM** | ***East Ballroom** |

## MEETING INFORMATION

Meeting information is located in the West Convention Center Level 1 across from 103 near Registration. The operating hours are:

| | |
|---|---|
| **Sunday, November 8** | **12:00PM–5:00PM** |
| **Monday, November 9** | **7:00AM–6:00PM** |
| **Tuesday, November 10** | **7:00AM–6:00PM** |
| **Wednesday, November 11** | **7:00AM–6:00PM** |
| **Thursday, November 12** | **7:00AM–3:00PM** |

## MEMBERSHIP TO ASME

Registrants who paid the non-member conference registration fees will receive a four-month complimentary ASME Membership. ASME will automatically activate this complimentary membership for qualified attendees. Please allow approximately four weeks after the conclusion of the conference for your membership to become active. Visit www.asme.org/membership for more information about the benefits of ASME Membership.

## NURSING/MOTHER'S ROOM

The "Nursing Mother's Room" will be located in room 103

## OPENING RECEPTION

**Exhibit Hall Grand Opening and Opening Reception**
**Monday, November 9**
**5:30PM–7:00PM**

**West Ballroom, West Convention Center**
All registrants are invited to this special event to celebrate the opening of the IMECE exhibits. Come grab a drink and some food, meet this year's group of exhibitors, and learn about their products and services.

## PHOTOGRAPHY

ASME has retained the services of a photographer to capture photo images of the events and activities from the conference. The photographer will be taking photos as assigned by the ASME Communications Department. All photographs are the sole property of ASME, and ASME retains all rights in and to said photographs. These photographs may be used for promotional purposes only, including, but not limited to, the ASME website. If you require more information about the use of IMECE photographs, please go to the media desk at Conference Registration.

## POSTER PRESENTATIONS

Poster presentations will be held at the following times:

**Monday, November 9**
**5:30PM–7:00PM**
**West Ballroom, West Convention Center**

UNDERGRADUATE RESEARCH AND DESIGN EXPO STUDENT POSTER COMPETITION

| | |
|---|---|
| **Poster Setup** | **2:00PM–4:00PM** |
| **Judging** | **4:00PM–6:15PM** |
| **Expo (General Viewing)** | **5:30PM–7:00PM** |

**Tuesday, November 10**
**1:15PM–2:15PM**
**West Ballroom, West Convention Center**

RISING STARS OF MECHANICAL ENGINEERING

| | |
|---|---|
| **Poster Setup:** | **9:00AM–10:00AM** |
| **General Viewing** | **1:15PM–2:45PM** |
| **Recognition Announcements** | **2:30PM–2:45PM** |

**Wednesday, November 11**
**12:00PM–2:00PM**
**West Ballroom, West Convention Center**

GOVERNMENT AGENCY STUDENT POSTER COMPETITION

| | |
|---|---|
| Poster Setup: | 9:00AM–10:00AM |
| Judging | 10:00AM–2:15PM |
| General Viewing | 12:00PM–2:00PM |
| Awards | By November 27 |

RESEARCH PODIUM (POSTERS ONLY)

| | |
|---|---|
| Poster Setup: | 9:00AM–10:00AM |
| Judging: | 10:00AM–1:45PM |
| General Viewing: | 12:00PM–2:00PM |
| Winners Announced: | 1:55PM |

## PRAYER ROOM

Room 104 on Level 1 of the West Convention Center is exclusively for those who need to pray in between sessions. There will be dividers in the room to create a semi-private space.

## PRESENTER ATTENDANCE POLICY

According to ASME's Conference Presenter Policy, if a paper is not presented at the Conference by a fully registered author of the paper, the paper cannot be published in the official archival Proceedings, which are published on The ASME Digital Collection post-conference. Papers not presented at the conference cannot be cited.

## PUBLICATIONS: IMECE2025 CONFERENCE PAPERS AND PROCEEDINGS

Technical papers accepted for publication for IMECE2026 will be available through a dedicated Online Papers site available to all fully paid attendees beginning a week before the conference.

- Zip files will be made available on the Online Papers site prior to the conference, so that users may download to their personal computer systems.
- Post-conference, papers presented at the conference will be published as the official Proceedings of the conference on The ASME Digital Collection (asmedigitalcollection.asme.org).

Authors may refer to The Digital Collection for DOI links and citation information for their papers.

All ASME Conference Proceedings are disseminated worldwide and submitted for indexing to SCOPUS, COMPENDEX, the ISI Conference Proceedings Citation Index, Web of Science (Clarivate), and Google Scholar.

For further information about ASME Publications, please contact conferencepubs@asme.org.

## REFRESHMENT BREAKS

West Convention Center 1st and 2nd Floor and Exhibit Hall

| | |
|---|---|
| Monday, November 9 | 10:35AM–11:10AM |
| Monday, November 9 | 3:05PM–3:25PM |
| Tuesday, November 10 | 10:35AM–11:10AM |
| Wednesday, November 11 | 9:50AM–10:10AM |
| Wednesday, November 11 | 9:50AM–10:10AM |
| Thursday, November 12 | 10:15AM–10:30AM |

## REGISTRATION

Convention Center West Ballroom Lobby

Conference registration will be located on Level 1 of the West Convention, Sunday–Thursday.

The operating hours are:

| | |
|---|---|
| Sunday, November 8 | 12:30PM–5:00PM |
| Monday, November 9 | 7:00AM–6:00PM |
| Tuesday, November 10 | 7:00AM–6:00PM |
| Wednesday, November 11 | 7:00AM–6:00PM |
| Thursday, November 12 | 7:00AM–3:00PM |

## SOCIAL MEDIA

Let's be social! We encourage you to use the hashtag #IMECE2026 to tag your social media posts and photos throughout the conference.

## TECHNICAL SESSIONS

Only fully registered conference attendees are allowed to attend plenary and technical sessions.

## TICKET SALES

Many division and society awards are given at the IMECE. Tickets for these functions may be purchased on-site at the ASME Registration Desk. Please purchase tickets as soon as possible after you register in order to avoid disappointment. In order to ensure accurate guarantees, it is possible that tickets may not be sold or available up to 48 hours prior to the event.

## WI-FI

Free Wi-Fi access is provided to IMECE conference attendees throughout the **Convention Center**.

# Technical Tours



## TECHNICAL TOURS

**Ballard Power Systems Tour**
**Burnaby BC, Canada**
**Powering a Cleaner Future – Today**

Ballard and GeoPura are accelerating the transition to cleaner, more resilient power.

As an integrated Energy-as-a-Service provider, Ballard offers complete hydrogen power solutions – from green hydrogen production and logistics to zero-emission fuel cell engines and stationary Hydrogen Power Units (HPUs).

The tour, including travel time, will be approximately 2.5 hours. A complimentary shuttle will depart from the Convention Center at 8:00am and will arrive at the Ballard facility at 8:45am. The tour will be held from 8:45 to 10:15am and is restricted to 30 participants. Guests will be driven back to the Convention Center and can expect to arrive by approximately 10:50am.

**Special Note: All attendees must wear closed toe shoes, safety glasses will be provided and Photos are not permitted in the lab.**

_____
Tour Date: Tuesday, November 10
Capacity: 30
Location: 9000 Glenlyon Parkway Burnaby BC V5J 5J8
Transportation: Shuttle/Bus
Meals: None
Cost: $30

# Keynotes



**MONDAY, NOVEMBER 9**
**OPENING KEYNOTE EVENT**
**11:10AM–12:10PM**
**EAST BALLROOM**

**Keynote Speaker:**



**Mattia Giustiniano**
*Senior Vice President, West Product Development & Motorsport*
*Bridgestone*

**Keynote Title: Data-Driven Dynamics: Modernizing Mobility Systems Through Advanced Simulation and Analytics**

**Biography:** Mattia Giustiniano serves as Senior Vice President, West Product Development & Motorsport at Bridgestone, a global leader in premium tires and sustainable mobility solutions. With a presence across major markets worldwide, Bridgestone delivers advanced tire technologies and mobility solutions for passenger, commercial, and motorsport applications, supporting safer, more efficient, and more sustainable mobility.

In his role, Mr. Giustiniano leads product development and motorsport activities across Europe and the Americas. He also oversees Bridgestone's Technical Centers in both regions, driving innovation, engineering excellence, and the development of next-generation mobility solutions.

A Mechanical Engineer with a Ph.D. in Automotive Engineering, Mr. Giustiniano has spent more than 23 years with Bridgestone, holding leadership positions across research, advanced development, product engineering, and technical management.

Throughout his career, he has worked across the entire innovation spectrum, from fundamental research and technology development to product industrialization, contributing to the advancement of tire technologies for both consumer and motorsport applications.

His international experience spans Europe, North America, and Japan, providing him with a unique perspective on the opportunities and challenges of leading global engineering organizations. A strong advocate for cross-cultural collaboration, he firmly believes that innovation thrives when diverse perspectives, experiences, and ways of thinking are brought together. Throughout his career, he has worked to bridge cultural differences across global teams, fostering environments where technical excellence, mutual trust, and open collaboration can flourish.

Under his leadership, Bridgestone's Technical Centers in Europe and the Americas have accelerated their digital transformation journey, becoming industry leaders in tire modeling and virtual product development. By combining the rigor of scientific research and experimental validation with the speed and flexibility enabled by advanced simulation, digital engineering, artificial intelligence, and data-driven methodologies, he has helped transform the way tires are designed, developed, and validated.

Mr. Giustiniano is the holder of numerous patents and intellectual property assets and has been a frequent keynote speaker and contributor at international conferences and industry events in the fields of automotive engineering, mobility, and motorsport. Throughout his career, he has also led and supported several technological innovation and sustainable mobility initiatives, both within Bridgestone and through collaborative European research programs focused on the future of transportation. His work has consistently focused on translating scientific advances into practical engineering solutions that improve performance, safety, efficiency, and environmental sustainability.

Passionate about the future of mobility, he is particularly interested in the intersection of advanced engineering, digital transformation, sustainable technologies, artificial intelligence, and motorsport as a platform for accelerating innovation.

**TUESDAY, NOVEMBER 10**
**KEYNOTE PANEL**
**11:10AM–12:10PM**
**EAST BALLROOM**

**Keynote Title: Engineering in the Age of AI: Opportunities, Risks, and Responsibilities**

**Description:** Artificial Intelligence (AI) is emerging as a disruptive tool that is impacting mechanical engineering profession. Once-complex tasks are becoming increasingly simple, but often at the cost of integrity and transparency. Once-insurmountable problems now seem solvable, but come with hidden caveats. As AI transforms how we design, build, and test mechanical systems, it brings unprecedented challenges and opportunities to the workforce. Our expert panel will unpack the real-world impact of AI across ME disciplines—from the evolution of daily engineering tasks to the critical aspects of design, safety, security, and professional ethics in an automated era.

**Panelists:**



**Mr. Mark Lamoncha**
*President and CEO*
*Humtown Products*

**Biography:** Mark Lamoncha is President and CEO of Humtown Products, a third-generation family-owned advanced manufacturer in Columbiana, Ohio, and the 2026 U.S. Small Business Administration National Small Business Person of the Year. Under his leadership, Humtown grew from a traditional pattern shop into a national leader in 3D-printed sand cores and molds for the foundry industry. An inventor, author, and TEDx speaker, Mark patented the Visual Earnings System™, which carries data from the quote through the plant's control systems to show each operator their earning rate in real time, cycle by cycle. That feedback has produced productivity gains of up to tenfold on some jobs and cut scrap rates from as high as 10 percent to as low as 2 percent. Humtown is now testing camera-based AI that suggests movement improvements to operators. Mark believes the best results come when the intelligence in the machine meets the intelligence in the people running it. He is co-author of The Industrial Athlete Operating System.



**Dr. James Hemsath**
*Managing Director and Senior Consultant*
*IntegrityOne, LLC*

**Biography:** Dr. James R. Hemsath, a licensed professional engineer and ASME member since 1976, is Member at Large (Programs) on the ASME Management Division Executive Committee. He earned his degree in Mechanical Engineering from the University of Michigan. A retired engineer and executive with more than 45 years of experience in engineering, project management and economic development, he holds a doctorate in business administration and teaches management and leadership at the University of Alaska Anchorage. Over the last year, Jim has been integrating AI into the classroom with specific attention to the ethics of its use. Recently at the University of Alaska Statewide Symposium on AI, he sat on the Ethics of Generative AI where his remarks have informed the University Advisory Council's planning. He will present on Ethics, Technology and the Human Question at IMECE 2026. In addition to his role in the Management Division, Jim is a member of the executive board of the INSciTS (International Network for the Science of Team Science) and a member of the UAA College of Engineering Advisory Board.



**Dr. Diana Andra Borca Tasciuc**
*Professor of Mechanical, Aerospace, & Nuclear Engineering*
*Associate Dean, Undergraduate Studies, School of Engineering*
*Rensselaer Polytechnic Institute (RPI)*

**Biography:** Diana-Andra Borca-Tasciuc is a Professor in the Department of Mechanical, Aerospace, and Nuclear Engineering and Associate Dean for Undergraduate Studies in the School of Engineering at Rensselaer Polytechnic Institute (RPI). She earned her B.S. in Physics from the University of Bucharest and her M.S. and Ph.D. in Mechanical Engineering from the University of California, Los Angeles. She joined RPI as a faculty member following her doctoral studies and has since contributed to the institution through teaching, research, and academic leadership. Dr. Borca-Tasciuc is actively engaged in the American Society of Mechanical Engineers (ASME), currently serving as Vice-Chair of the ASME Heat Transfer Division Executive Committee and Associate Editor of the ASME Journal of Heat and Mass Transfer. Her honors include the Northeastern Association of Graduate Schools Faculty Teaching Award, RPI's Classroom and Research Excellence Awards, a Fulbright Scholar Award, and the NSF CAREER Award. Her research focuses on thermal transport, energy conversion, microsystems, and nanoengineering, with applications in

energy harvesting and sustainable technologies. As an educator and academic leader, she brings a perspective on engineering education, faculty engagement, and the opportunities and challenges of integrating artificial intelligence into higher education while preparing the next generation of engineers to effectively leverage AI in their professional careers.



**Dr. Siddiq Qidwai**
*Section Head, Civil, Mechanical and Manufacturing Innovation Section*
*National Science Foundation*

**Biography:** Siddiq Qidwai is a Section Head of one of the two Civil, Mechanical and Manufacturing Innovation Sections in the Directorate for Engineering at the US National Science Foundation (NSF). Before joining NSF, he was a Section Head (acting) in the Materials Science & Technology Division of the US Naval Research Laboratory. Qidwai received his PhD in aerospace engineering from Texas A&M University. He is a Fellow of the American Society of Mechanical Engineers (ASME) and US National Association for Computational Mechanics (USACM). At NSF, Qidwai is a member of a Foundation-wide team that is working on the Future of Intelligence Frontier Initiative in response to the Office of Science and Technology Policy's report on Science, A New Golden Age. This initiative acknowledges the disruptive impact of Super Intelligence on both research and education, the twin cardinal aspects of NSF's mission, and the need to immediately start working on the next transformative way forward.

**THURSDAY, NOVEMBER 12**
**12:00PM–1:30PM**
**(LUNCH SERVED FROM 12:00PM TO 12:30PM)**
**EAST BALLROOM**

**Keynote Title: Clarity at the Speed of Change: How Engineers Turn Complexity into Advantage**



**John Ustica**
*President & Chief Executive Officer*
*Siemens Government Technologies*

**Biography:** John Ustica is the President & CEO of Siemens Government Technologies (SGT), Inc., the separate but affiliated U.S. government arm of technology powerhouse Siemens. With project teams throughout the U.S. and overseas, SGT is a cleared provider of Siemens products, technologies, and software to solve some of the most complex government challenges in energy, automation, and digitalization. In his role as CEO, Mr. Ustica leads a dynamic project-focused organization working on transformative initiatives that are unlocking new levels of energy resiliency and digital transformation across military bases and depots, helping federal agencies deploy product lifecycle management software tools and digital twins connecting the real and virtual worlds to optimize operations, predict outcomes more accurately, and reduce overall costs. Mr. Ustica has more than 25 years' experience with Siemens, serving customers around the world, recognized for his unique depth of blended technical and operational knowledge of the Siemens advanced technology portfolio. Honored for his contributions to local communities and industry, he has been recognized as Public Company CFO of the Year in 2021 and CEO of the Year in 2025 by WashingtonExec, and is a four-time winner of the Wash100 Award organized by the media and events company Executive Mosaic, given annually to those executives who distinguish themselves for their thought leadership, vision, commitment, innovation, and contributions to the broader government contracting community. He serves on the board of directors for Tri-Tool Inc., the Northern Virginia Technology Council, and the Professional Services Council.

Mr. Ustica holds a Master of Business Administration degree from Rollins College and a Bachelor of Science in Business Administration degree in finance from the University of Central Florida.

## HONORARY MEMBERS



**Gerard Ateshian, Ph.D.**
*Columbia University*

For contributions to the study of cartilage structure-function relationships, the role of interstitial fluid pressurization in cartilage friction, and the role of synovial fluid in cartilage wear as induced by fatigue failure; and for co-developing the widely-used open-source finite element software FEBio.



**Samuel Graham, Jr., Ph.D.**
*University of Maryland*

For pioneering contributions to the fields of thermal science and advanced electronics; for leadership in advancing engineering research and education; and for sustained contributions addressing the strategic needs of the United States through federal advisory boards.



**M. Cynthia Hipwell, Ph.D.**
*Texas A&M University*

For innovation and thought leadership impacting industries from hard disk drives to education to robotics; and for leadership in the development of nanoscale technologies for performance and reliability improvement.



**Daniel Inman, Ph.D.**
*University of Michigan*

For a lifetime of service to the engineering community, including decades of work as an editor of multiple ASME journals; for an outstanding research record resulting in numerous widely-cited publications; and for the supervision of 71 Ph.D. students to completion.



**Xin Zhang, Ph.D.**
*Boston University*

For pioneering metamaterials and microsystems that establish structural design as a governing mechanism for functional performance; and for translating these principles into transformative technologies in photonics, acoustics, and medical imaging, fundamentally redefining the scope and impact of mechanical engineering.

# Plenary Sessions



**NOVEMBER 9**
**8:00AM–8:45AM**



**Kon-Well Wang**
*University of Michigan*

**Presenting in Track 1: Acoustics, Vibration, and Phononics**

**Presentation Title: Embodying Programmability and Mechano-Intelligence in Phononic Matter**

**Abstract:** This presentation will provide a glimpse into the research activities of the speaker's group in the field of adaptive phononic matter, which have evolved throughout the years from responsive materials-based structures to programmable and reconfigurable metamaterials and metastructures, and to embodying computing and mechano-intelligence in structural wave dynamics. For example, inspired by the richness of origami folding, a class of adaptive modular metastructures is created building on the innovation of programmable origami elements. The modules are designed to be reconfigurable in their shape, mechanical properties, and stability features, so to achieve adaptable phononic matter for bandgap control, acoustic beamforming, and wave steering. One objective is to uncover and harness the fundamental principles that govern phononic Dirac physics, thereby enabling the design of practical acoustic beamforming and wave steering platforms for remote sensing applications. We first focused on discrete, highly-symmetric phononic metastructures for bandgap engineering and directional beamforming, then expanded the investigation to include continuously variable lattice configurations. We explored how reconfigurable origami geometries enable systematic modulation of the lattice symmetry allowing continuous control over the frequencies and locations of Dirac cones. We discovered that Dirac cones can persist and migrate even in the transitioning low-symmetry lattices, a key step towards expanding the control of phononic metastructures for broad range wave steering.

More recently, with the rapid advances in autonomous systems, an emerging direction is to pioneer and harness the metastructures' unique features for mechano-intelligence. That is, to advance the state of the art by pioneering the framework of physical computing as the needed foundation to create and integrate the essential elements of intelligence, such as information perception, memorization, learning, and decision making, in and through metamaterials as building blocks to achieve intelligent metastructures, harnessing the system's nonlinearity, complexity, and wave dynamics. Drastically different from the digital architecture, physical computing will be "chip-free," designed directly in/through the mechanical domain. The idea is not to compete with or replace digital computers, but to selectively outsource and decentralize some of the intelligence into the mechanical domain that can interface and work with its digital counterpart synergistically, which will dramatically empower future adaptive structures with better energy efficiency and sustainability, more direct interaction with the surroundings, and much higher resilience against harsh environment and cyberattack. This emerging idea has been harnessed to create mechanically intelligent metastructures for wave and vibration controls, and wave-based classification, logic, and communication. This talk will highlight some of these advancements in embodying programmability and mechano-intelligence in phononic matter and discuss future directions.

**Biography:** Dr. Kon-Well Wang is the A. Galip Ulsoy Distinguished University Professor of Engineering and Stephen P. Timoshenko Professor of Mechanical Engineering (ME) at the University of Michigan (U-M). He has been the U-M ME Department Chair (2008–18) and has served as a Division Director at the U.S. National Science Foundation. Wang received his Ph.D. from the University of California, Berkeley. He started his academic career at the Pennsylvania State University in 1988 and joined the U-M in 2008. He is a recipient of many top awards in the field, such as the ASME Rayleigh Lecture Award, the Pi Tau Sigma-ASME Charles Russ Richards Memorial Award, the ASME J.P. Den Hartog Award, the SPIE Smart Structures and Materials Lifetime Achievement Award, and the ASME Adaptive Structures and Materials Systems Prize. He has been the Editor-in-Chief (EIC) for the *ASME Journal of Vibration and Acoustics* and is the current EIC for the *Journal of Intelligent Material Systems & Structures*. Wang is a Fellow of the AAAS, AIAA, ASME, IOP, and RAeS, and an Honorable Member of the ASME.

**NOVEMBER 10**
**8:00AM–8:45AM**



**James Friend**
*Washington University in St. Louis*

**Presenting in Track 1: Acoustics, Vibration, and Phononics**

**Presentation Title: Controlling the Uncontrollable: Acoustic Manipulation of Turbulent and Porous-Media Flows from Fundamental Physics to Functional Devices**

**Abstract:** Acoustic waves provide a remarkable pathway to manipulate fluids across scales ranging from nanometers to centimeters, enabling phenomena that span directed transport in porous materials to strongly nonlinear turbulent wave dynamics. In this talk, I will discuss recent advances from our laboratory in understanding and exploiting acoustically driven flows in systems that are traditionally considered difficult to control: turbulent free-surface flows and fluid transport through porous media.

First, I will present recent results on capillary-wave turbulence generated by high-frequency ultrasonic excitation of sessile droplets. Using high-speed digital holographic microscopy with nanometer-scale vertical resolution and frame rates exceeding 100,000 frames per second, we observe transitions from weak and discrete turbulence to strongly nonlinear turbulent states and atomization. Of particular interest are intermittent transitions between neighboring turbulent regimes modulated by viscosity and excitation strength, revealing stochastic switching behavior and nonlinear resonance broadening not captured by classical weak-wave turbulence theory. These tabletop turbulent systems provide an experimentally accessible platform for studying rogue-wave statistics, intermittency, and machine-learning-assisted prediction of nonlinear flow behavior. This work forms part of our DARPA STORMLAP effort aimed at developing scientific machine learning approaches for strongly nonlinear turbulent systems.

Second, I will discuss the development of floating-electrode unidirectional transducers (FEUDTs) for acoustically driven transport through porous media. We demonstrate that unidirectional surface acoustic wave generation can transform porous materials into actively pumped transport platforms, overcoming limitations associated with tortuous pore networks, viscous dissipation, and counterflow. We identify a practical design rule in which transport is maximized when the acoustic wavelength approaches the characteristic pore dimension. Under optimized conditions, these systems sustain directional flow velocities hundreds of times greater than diffusion alone while operating at sub-watt power levels. The results establish new opportunities for acoustic control in filtration, diagnostics, energy systems, and biomaterials.

Together, these studies suggest that acoustically driven flows offer not merely new microfluidic tools, but experimentally controllable model systems for probing and engineering nonlinear transport phenomena across physics, materials science, and bioengineering. Acoustic waves provide a remarkable pathway to manipulate fluids across scales ranging from nanometers to centimeters, enabling phenomena that span directed transport in porous materials to strongly nonlinear turbulent wave dynamics. In this talk, I will discuss recent advances from our laboratory in understanding and exploiting acoustically driven flows in systems that are traditionally considered difficult to control: turbulent free-surface flows and fluid transport through porous media.

**Biography:** James Friend is the Stephen F. and Camilla T. Brauer Distinguished Professor and Chair of Mechanical Engineering and Materials Science at Washington University in St. Louis. His research focuses on acoustofluidics, nonlinear fluid dynamics, biomedical ultrasonics, and microscale transport phenomena, particularly the use of acoustic waves to manipulate fluids, interfaces, particles, and biological systems.

Before joining Washington University, he served on the faculty at the University of California San Diego following 14 years as a faculty member in Japan and Australia. He has published more than 350 peer-reviewed papers, holds 32 patents, and has led over $37 million in externally funded research programs spanning acoustofluidics, sonogenetics, microfluidics, turbulence, and biomedical device development. His recent work explores strongly nonlinear capillary-wave turbulence, acoustically driven transport in porous media, and ultrasound-enabled biomedical technologies.

Professor Friend is a Fellow of the IEEE and the Royal Society of Chemistry. Among other honors, he received the IEEE Carl Hellmuth Hertz Ultrasonics Award and the UC San Diego Distinguished Teaching Award. He also serves as cofounder and CTO of multiple technology startups focused on medical diagnostics, neurovascular intervention, and energy systems.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Reza Vaziri**
*The University of British Columbia*

**Presenting in Track 2: Advanced Design and Information Technologies**

**Presentation Title: A Systems-Based Computational Framework for Continuous Resistance Welding of Thermoplastic Composites**

**Abstract:** Integrated design can extend the light-weighting potential of structural composite components in the aerospace industry. However, with increased component complexity and size, aspects such as manufacturing complexity and costs predominate, which is why differential construction is still the state of the art today. Welding technologies provide an approach for producing integrated, high-performance fiber-reinforced thermoplastic composite structures. A promising technique is continuous resistance welding (CRW), in which a localized heating zone is translated along the joint using a gantry or robotic system. This process uses Joule heating of a conductive insert to generate heat, locally melting the joint along the mating surfaces of the two consolidated components to be joined.

Complexity in CRW processing increases markedly when scaling to production environments. As with other thermoplastic welding technologies, noninvasive measurement of the temperature at the weld interface (i.e., without the use of embedded thermocouples), remains infeasible, despite being critical for controlling the process in order to ensure joint strength and quality. However, physics-based process simulation can help mitigate this limitation and reduce uncertainty in the welding process.

To this end, a rigorous, systems-based computational framework was developed and validated to simulate the CRW process, predict thermal histories, and qualitatively capture interfacial melting. This framework consists of a detailed three-dimensional finite element (FE) model to evaluate the thermal response of the welded components, coupled with an electrical model that generates heat maps accounting for contact resistances and current leakage. The detailed simulation was used to establish the causal relationship between process parameters and weld interface temperature, thereby guiding the selection of experimental conditions. With a validated model, useful investigations into typical processing deviations were shown to be well captured with predictive control. The full model was further used to determine nominal process parameters, such as applied electric voltage and welding speed, to ensure operation within the desired processing window.

The efficiency limitations of the full FE model, however, hinders process design optimization, real-time control, uncertainty quantification, and large-scale parametric studies that are required for industrial settings. To address these challenges, a surrogate model was developed by learning the input-output relationships of the high-fidelity FE simulations. The surrogate model's efficient inverse analysis capability enabled its deployment in a robotic CRW demonstration, where electrical current feedback was used to estimate weld temperatures in real time, predict peak temperatures, and compensate for process fluctuations through adaptive adjustments to the applied voltage and welding speed.

**Biography:** Dr. Vaziri is a Professor in the Department of Civil Engineering and Scientific Director of the Composites Research Network at the University of British Columbia (UBC). He is currently an Associate Dean of the Faculty of Applied Science and previously served as the Head of the Department of Civil Engineering at UBC. Dr. Vaziri obtained his B.Sc. in Civil Engineering from University College London, and his Ph.D. from UBC specializing in mechanics of composite structures. Dr. Vaziri's contribution to engineering research has been the development of computational modeling techniques to solve a variety of problems in materials and structures and the transferring of the technology to the user community (e.g., industries, government research agencies, and private companies). His research has been focused on the development of analytical and numerical modeling techniques to simulate the manufacturing process of composite structures as well as their fracture and damage behavior under high intensity impact and crash loadings. Dr. Vaziri's research has attracted numerous research grants and contracts over the years from various government and industrial sources (e.g., aerospace, automotive. and defence) both in Canada and in the U.S. The body of research has led to the training of several graduate students with over 20 doctoral students graduated. Dr. Vaziri serves on the technical advisory board of several international scientific and engineering organizations, including the *International Journal of Impact Engineering*. He served as the Co-Chair of the 16th World Congress on Computational Mechanics (WCCM 2024).

**NOVEMBER 10**
**8:00AM–8:45AM**



**Vasiliy Krivtsov**
*The Ford Motor Company & The University of Maryland*

**Presenting in Track 3: Advanced Manufacturing**

**Presentation Title: Recent Advances in Root Cause Analysis of Reliability Issues**

**Biography:** Vasiliy Krivtsov is the Director of Reliability Analytics at the Ford Motor Company and a Henry Ford Technical Fellow. He also holds the position of Adjunct Professor of Reliability Engineering at the University of Maryland, where he teaches a graduate course on Advanced Reliability Data Analysis and coordinates students' research projects.

Krivtsov has earned a Ph.D. degree in Electrical Engineering from Kharkiv Polytechnic Institute, Ukraine, and a Ph.D. in Reliability Engineering from the University of Maryland, USA. He is the author and co-author of over 90 professional publications, including two books on Reliability Engineering and Risk Analysis, 10 patented inventions, and seven internal (trade secret) inventions on statistical algorithms for Ford. He is a Vice Chair of the International Reliability Symposium (RAMS®) Tutorials Committee and a Senior Member of IEEE. Prior to Ford, Krivtsov held the position of Associate Professor of Electrical Engineering in Ukraine, and that of Graduate Research Scientist at the University of Maryland Center for Reliability Engineering.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Soumya Nag**
*Oak Ridge National Laboratory*

**Presenting in Track 3: Advanced Manufacturing**

**Presentation Title: Directed Energy Deposition Additive Manufacturing Strategies for Alloy Development and Convergent Manufacturing**

**Abstract:** Metal additive manufacturing technologies such as Directed Energy Deposition (DED) provide a transformative opportunity to synergistically couple materials, design, and manufacturing strategies for next-generation structural components. This presentation focuses on convergent manufacturing approaches enabled through wire- and blown-powder DED processes for the fabrication of large-scale, high-performance components for energy, aerospace, marine, and defense applications. Particular emphasis will be placed on leveraging DED not only as a manufacturing pathway, but also as a rapid alloy development platform capable of integrating compositional control, multifunctional architectures, and process-informed microstructural engineering within a single workflow.

The talk will provide a scientific deep dive into several alloy development strategies uniquely enabled by DED processing. Case studies include process–structure–property investigations in Ti-6Al-4V using build parameter design-of-experiments (DOE) approaches to correlate defect populations, microstructural descriptors, and mechanical performance through physics-based predictive modeling and response surface development. Additional examples will highlight multi-material and compositionally graded systems involving Ni-base superalloys (IN718/IN625) transitioning into Nb-based refractory alloys (C103), with emphasis on phase transformations, residual stress evolution, and deformation mechanisms across dissimilar alloy interfaces.

The presentation will further discuss the integration of *in situ* sensing, thermal monitoring, and advanced characterization techniques to establish spatiotemporal understanding of additive builds and accelerate qualification pathways for large components. Coupling DED with powder metallurgy and hot isostatic pressing (PM-HIP) strategies for large-scale components, such as valves, pumps, and impellers, will be discussed, highlighting opportunities for reduced lead times, near-net-shape manufacturing, repair, and low-volume/high-value component production. Collectively, these efforts demonstrate how DED-enabled convergent manufacturing can accelerate alloy innovation and support the deployment of advanced manufactured systems for extreme service environments.

**Biography:** Soumya Nag is in the Materials Science and Technology Division at Oak Ridge National Laboratory. His research interest is understanding processing (additive and conventional)—structure (phase transformation across different length and time scales)—property (mechanical and environmental property) relationships in light weight and high temperature structural alloys.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Stewart Silling**
*Lehigh University*

**Presenting in Track 4: Advanced Materials: Design, Processing, Characterization, and Applications**

**Presentation Title: Modeling Damage and Fracture with Peridynamics**

**Abstract:** Over its 26-year history, the peridynamic theory of solid mechanics has provided capabilities for modeling phenomena that are challenging when treated using standard methods. This talk provides a general background on the theory, focusing on its unique way of predicting material failure due to the progression of damage and fracture. Peridynamics is a nonlocal theory that does not require the differentiability of the displacement field, thus providing an opportunity to model singularities such as cracks within its basic field equations, thereby minimizing the need for special techniques. This generality allows a seamless transition from a continuous material under loading, to continuous damage, to defect nucleation, to crack initiation, to macroscopic failure. Damage evolution is embedded in a thermodynamic framework that ensures consistency between the mechanical response and the First and Second Laws expressed in nonlocal form. It is shown that the peridynamic equations reduce to those of classical solid mechanics in the limit of a large length scale. But processes in the model occurring at smaller length scales can behave differently, allowing more realistic modeling of deformation and diffusive transport at the microscale and mesoscale. The main features of the theory are described in this talk and its capabilities are demonstrated through examples drawn from diverse applications in industry. The nature, appropriateness, and consequences of nonlocality in a mechanics model are discussed.

**Biography:** Stewart Silling recently retired after a 35-year career at Sandia National Laboratories in Albuquerque, New Mexico. He has a Ph.D. in applied mechanics from the California Institute of Technology. His research is in theoretical and computational mechanics. Dr. Silling is known primarily as an originator and developer of the peridynamic theory of solid mechanics. He has a broad range of experience in the computer modeling of applications in industry and was a Visiting Scholar at The Boeing Company. He was awarded the Ted Belytschko Medal by the U.S. Association for Computational Mechanics in 2015. Dr. Silling was a founding co-editor of the *Journal of Peridynamics and Nonlocal Modeling*, published by Springer Nature. He currently has an appointment as Visiting Collaborator at the Department of Mathematics at Lehigh University and is writing a book about peridynamics.

**NOVEMBER 11**
**8:00AM–8:45AM**



**Jie Yin**
*North Carolina State University*

**Presenting in Track 4: Advanced Materials: Design, Processing, Characterization, and Applications**

**Presentation Title: Physically Intelligent Soft Robotics**

**Abstract:** Different from neuron-based computational intelligence through the brain, physical intelligence leverages structural designs and smart materials to physically encode sensing, actuation, control, adaption, and decision-making into the body of an agent. The stimuli-responsive body materials can enable autonomous sensory, actuation, powering, and other physical intelligence functions. The structural designs of soft body can simplify the required actuation for deformation and motion, as well as enable real-time feedback control-free locomotion and self-adaption. I will discuss our recent work in embodying mechanical intelligence of structural designs and/or materials intelligence of soft active materials in soft robotics, for achieving high performance in manipulation, locomotion, autonomy, and intelligence with reduced control complexity. First, I will talk about utilizing the ancient paper cutting art of kirigami for programmable shape shifting and its applications in noninvasive and delicate grasping and aerial manipulation. Then, I will discuss how to leverage snapping instabilities for fast, efficient, and maneuverable soft robotic swimmers under minimal actuation and simplified control. Finally, I will discuss examples of integrating structural designs with soft active materials for achieving autonomy and intelligence in soft robots and conclude the talk with outlook of physical-intelligence-embodied robotics.

**Biography:** Dr. Jie Yin is currently a Professor and University Faculty Scholar in the Department of Mechanical and Aerospace Engineering at NC State University. Prior to join NC State, he was an Assistant and Associate Professor at Temple University. Dr. Yin received his Ph.D. in engineering mechanics from Columbia University and M.S. in solid mechanics from Tsinghua University. He is the recipient of several prestigious honors, including the 2025 Presidential Early Career Award for Scientists and Engineers (PECASE) from the White House, the 2022 Cozzarelli Prize from the National Academy of Sciences (NAS), NSF Career Award, and Extreme Mechanics Letters (EML) Young Investigator Award. His group's current research focuses on mechanics guided design of soft robotics, mechanical metamaterials, and shape-morphing functional materials for better health and sustainability.

**NOVEMBER 12**
**8:00AM–8:45AM**



**David Daggett**
*University of Connecticut*

**Presenting in Track 6: Advances in Aerospace Technology**

**Presentation Title: Addressing Global Aerospace Challenges Through Innovative Ideas**

**Abstract:** This educational presentation explores several aerospace design challenges and presents some innovative design ideas for next-generation aerospace vehicles that maximize energy efficiency, environmental performance, and long-term viability. Drawing on lessons from aerospace history, emerging airframe/propulsion technologies and study results from a recent ARPA-E contract, the work emphasizes possible solutions across airplane wings, engines, fuels, fuselage architecture, and aerospace operational concepts. Results included high-aspect-ratio truss-braced wings, folding wing mechanisms for airport compatibility, and propulsion placement that preserves uniform inlet airflow and minimizes aerodynamic disturbance. Airplane propulsive efficiency is advanced through ultra-high-bypass engines, open-fan concepts, and hybrid-electric architectures incorporating Solid Oxide Fuel Cells (SOFCs) with supporting turbomachinery for takeoff and high-altitude performance. Fuel selection is addressed through a safety, operability and sustainability lens, highlighting (Renewable) Liquefied Natural Gas as a practical near-term option relative to ammonia or hydrogen. The presentation also examines non-CO2 climate impacts such as persistent contrails. Beyond technical performance, the significance of this study underscores commercialization enablers such as possible modular fuselage designs, multi-role civil/military adaptability, passenger-centered cabin layouts, and upgrade-ready architectures that account for aircraft designs exceeding 50 years of production. Collectively, these considerations define future aerospace concepts that could be efficient, scalable, lower-risk, and better aligned with evolving market and environmental demands.

**Biography:** David L. Daggett, Ph.D., is a retired Boeing Technical Fellow and Professor of Practice at University of Connecticut with more than 50 years of aerospace experience. His career has centered on advancing sustainable aviation through pioneering work in Sustainable Aviation Fuel (SAF), fuel cells, and next-generation aircraft and propulsion systems. He co-invented one of the first fuel cell–powered demonstrator aircraft, launched early SAF flight initiatives, pioneered the Solid Oxide Fuel Cell Auxiliary Power Unit concept, and led Boeing's Advanced Concepts "Green Team". An AIAA Associate Fellow, he continues to lead university and ARPA-E research into low-emission aircraft technologies.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Geoffrey Maksym**
*Dalhousie University*

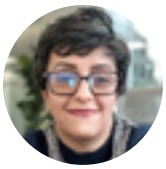
**Presenting in Track 7: Biomedical & Biotechnology Engineering**

**Presentation Title: Bioengineering Advances in Lung Measurement, Imaging, Modeling, and Treatment**

**Abstract:** Respiratory disease is now the 3rd leading cause of death worldwide, and respiratory function is intrinsically biomechanical, as often is its dysfunction. This talk begins at the cell level covering examples of the role and development of tools for the measurement and the role of mechanical force in altering lung cell function providing insights into asthma. The talk then proceeds to advances in tools for probing respiratory mechanics, including my lab's journey to develop medical technology from lab to clinic through prototype to commercialization. Current research includes how novel imaging of the breathing lung together with biomechanical modeling "image-functional modeling," including advances to temporal tracking during breathing of respiratory mechanics that is providing novel interpretation of the mechanisms of disease and its measurable characteristics that are changing understanding and treatment for lung health.

**Biography:** Geoff Maksym is Professor of the School of Biomedical Engineering, Dalhousie University in Halifax, Canada, and leads the respiratory cell and lung mechanics laboratory. He trained at McGill University and the Harvard School of Public Health. His research is respiratory mechanics from the cellular level to human organ function. He develops research tools to probe the mechanical properties from the cytoskeleton of airway smooth muscle cells, including 3D tissue engineering constructs, to measurements of the respiratory system in humans. He co-founded Thorasys, Montreal, and developed the Tremoflo C-100 for handheld portable oscillometry, which measures mechanical function and time tracking of respiratory mechanics, used worldwide for research, pharmaceutical trials and clinically. He has significant research contributions in computational modeling of the multibranched airway tree impedance in health and disease and biomedical engineering applications in asthma, chronic obstructive pulmonary disease, lung transplant and recently lung cancer. He is the 2026 recipient of the Joseph R. Rodarte Award for Scientific Distinction of the RSF Assembly of the American Thoracic Society.

**NOVEMBER 10**
**8:00AM–8:45AM**



**Parastoo Dehkordi**
*HeartForce Medical Inc.*

**Presenting in Track 7: Biomedical & Biotechnology Engineering**

**Presentation Title: Seismocardiography as a Mechanical Biomarker for Coronary Artery Disease Risk Stratification**

**Abstract:** Seismocardiography (SCG) measures low-amplitude chest-wall vibrations generated by cardiac mechanical activity. These vibrations reflect ventricular contraction, valve motion, blood acceleration, myocardial motion, and the transmission of cardiac forces through the thorax. Because coronary artery disease can affect myocardial contraction, relaxation, and electromechanical coupling, SCG may capture mechanical signatures associated with altered cardiac performance.

This work presents a wearable SCG-based approach for noninvasive estimation of coronary artery disease likelihood. Triaxial SCG signals are recorded from the chest wall and processed to assess signal quality, segment cardiac cycles, and extract cycle-level mechanical features. Time-domain and time-frequency analyses are used to capture changes in the shape, timing, and spectral behavior of cardiac-induced chest-wall motion.

The extracted SCG features are integrated with clinical variables using machine-learning models to generate an electromechanical risk score. This approach treats SCG not simply as a vibration signal, but as a measurable representation of cardiac mechanical function. By linking chest-wall vibration analysis, cardiac biomechanics, wearable sensing, and AI-based modeling, this work highlights the potential of SCG as a mechanical biomarker platform for cardiovascular risk stratification.

**Biography:** Dr. Parastoo Dehkordi is Vice President of Research and Development at HeartForce Medical Inc., where she leads the development and validation of AI-based technologies for non-invasive risk assessment of coronary artery disease. She holds a Ph.D. in Biomedical Engineering from the University of British Columbia and has extensive experience in biomedical signal processing, seismocardiography, machine learning, and clinical validation of cardiovascular technologies. Her current work focuses on CardioClinTM, a wearable SCG-based system that estimates the likelihood of coronary artery disease using cardiac mechanical activity and clinical risk factors.

**NOVEMBER 11**
**8:00AM–8:45AM**



**Li Cheng**
*The Hong Kong Polytechnic University*

**Presenting in Track 8: Dynamics, Vibration and Control**

**Presentation Title: Slow Wave Structures for Vibration and Noise Control**

**Abstract:** Acoustic/elastic waves can be manipulated through proper structural design to produce the so-called slow wave phenomenon. In flexible structures undergoing bending vibrations, slow waves can be enabled by tailoring the structural thickness or material density according to a power-law relationship, leading to gradually reduced phase/group velocity of the flexural waves alongside a compression of the wavelength and enhancement of the energy density. This phenomenon, known as the "Acoustic Black Hole" (ABH), can be leveraged in many engineering applications such as the design of lightweight and highly damped structures, sound-proofing structures, dynamic absorbers and energy harvesting devices, etc. For sound waves, the counterpart of the ABH is the so-called "Sonic Black Hole" (SBH), which can be realized inside a conduit by means of a series of spacers with reducing inner diameters. Due to the combined effects of wave compression and energy concentration, slow waves within the SBH waveguide allow for efficient sound absorption with proper boundary treatment. This talk reviews some of the recent advances in both ABH and SBH research made by the research team led by the speaker. Modeling and analytical tools, salient phenomena, underlying physical principles, and potential applications of slow-wave-based vibration and noise control techniques will be showcased and discussed.

**Biography:** Dr. Li Cheng is a Chair Professor, Director of the Consortium for Sound and Vibration Research (CSVR) and Associate Dean (Research) of the Faculty of Engineering at the Hong Kong Polytechnic University. After obtaining his Ph.D. degree from the Institut National des Sciences Appliquées de Lyon (INSA-Lyon, France), he became a faculty member at Laval University (Canada) before joining Hong Kong PolyU in 2000. He was formerly the Head of the Department of Mechanical Engineering. He currently serves as Deputy Editor-in-Chief of the *Journal of Sound and Vibration*, Associate Editors of the *Journal of the Acoustical Society of America*, *Structural Health Monitoring: An International Journal* and *Nonlinear Dynamics*. Dr. Cheng is a Fellow of the Royal Society of Canada (Academy of Science), a Fellow of the Canadian Academy of Engineering, a Distinguished Fellow of the International Institute of Acoustics and Vibration, and a Fellow of five other societies. He served as President of the Hong Kong Society of Theoretical and Applied Mechanics. He is currently the President of the International Institute of Noise Control Engineering (I-INCE).

**NOVEMBER 12**
**8:00AM–8:45AM**



**Antonina Pirrotta**
*University of Palermo, Italy*

**Presenting in Track 8: Dynamics, Vibration and Control**

**Presentation Title: Next-Generation Tuned Liquid Column Dampers: Innovations in Modeling and Technology**

**Abstract:** Among passive vibration control systems, Tuned Liquid Column Damper (TLCD) is of great interest for some of its characteristics, such as easy implementation, low cost of construction and maintenance, no need to add mass to the structure if the liquid is used as water supply, as well as control performance comparable to other passive control devices. Although the increasing use of these devices for structural vibration control, it is shown that existing model does not always lead to accurate prediction of the liquid motion. In this talk, a different formulation of the equation of motion of the TLCD liquid displacement is presented, taking advantage of the fractional derivative and its properties. Experimental validation of the predicted behavior is fully developed in frequency and time domain as well.

Moreover, due to the inherent long-period nature of TLCDs, early investigations focused mainly on the application of these devices in flexible structures such as tall and slender structures, which are characterized by high natural periods and are highly prone to wind-induced vibrations, However, seismic excitations encompass a broader frequency bandwidth, rich in high-frequency content compared to wind-induced vibrations, which can be potentially hazardous to both flexible and stiff structures. Tuning the TLCD to match the shorter periods of such structures presents challenges in achieving feasible lengths of the TLCD column tube. The need to tune the TLCD frequency to match the frequency of the structure further limits its application to stiffer structural configurations. In this talk, it will be introduced how to extend their utility to short-period structures.

**Biography:** Antonina Pirrotta is a Full Professor in Structural Mechanics at the University of Palermo, Italy. She graduated in Civil Engineering from Palermo University in 1987. Firstly, for six years she worked as a freelance structural engineer, then has done a Ph.D. in Structural Engineering in 1996 and as Post-doctoral studies in 1998. In 2000, she became a researcher, in 2001 Associate Professor, and in 2016 Full Professor in the Engineering Department at the University of Palermo, Italy.

- HEAD of Ph.D. School of University of Palermo from 2023
- EAD of CIDIS from 2021
- Board of Governors of ASCE (EMI) 2021–2024 (exceptionally renewed every year)

Her achievements resulted in many scientific recognitions and awards, which include the appointment as Chair of IDEA Innovative Dynamics Experiments Association (2022), several fellowships, memberships on scientific committees of various key international conferences, a membership on the Advisory Board of the MSCA COFUND Doctoral Programme at the University of Innsbruck, and many invitations as plenary speaker at several international conferences.

Prof. Pirrotta has organized and co-organized an exceptionally large number of international conferences, the last EMI 2023 International Conference organized at University of Palermo and for what she received the appreciation award, mini symposia, and summer schools in Italy and all over the world. She is an Associate Editor of the *Journal of Engineering Mechanics* (ASCE), (first professor with Italian affiliation) and of Meccanica, which are two absolute top journals in the field. Additionally, she is a member of the Editorial Board of various international scientific journals. She was a Visiting Professor at many universities all over the world, such as Tongji University, Columbia University, Liverpool University, TU Wien, etc. With over 180 published papers, she is a leading researcher in the field of structural mechanics and collaborates with renowned institutions worldwide.

**NOVEMBER 12**
**8:00AM–8:45AM**



**Dr. Han Hu**
*University of Arkansas*

Presenting in Track 9: Energy

**Presentation Title: From Interfaces to Infrastructure: Designing, Assessing, and Monitoring Data Center Cooling for the AI Era**

**Biography:** Han Hu is an Associate Professor and Twenty-First Century Professor in Engineering in the Department of Mechanical Engineering at the University of Arkansas, where he is also affiliated with the UA Power Group. He leads the NED$^3$ Laboratory, which develops open datasets and AI software for thermal-fluid research. His work spans multiscale two-phase heat transfer, multimodal acoustic, optical, and thermal sensing, physics-aware machine learning, thermal management of high-power-density systems, and data-center energy, water, and life-cycle assessment. He earned his Ph.D. in Mechanical Engineering from Drexel University and completed postdoctoral research at Purdue University. He teaches Thermodynamics and Machine Learning for Mechanical Engineers. In 2026, he received the Mechanical Engineering Outstanding Teacher Award and University of Arkansas Outstanding Mentor recognition.

**NOVEMBER 11**
**8:00AM–8:45AM**



**Gary Bertoline**
*Purdue University*

**Presenting in Track 10: Engineering Education**

**Presentation Title: The Engineering Mindset Project: Engineering Curricula and Pedagogy for the 21st Century**

**Abstract:** For over 70 years, undergraduate engineering education has largely adhered to the "Grinter mindset," a model established in 1955 that emphasizes calculus-driven rigor and a "weed-out" culture. While this approach helped shape engineering as a science-based profession, it is increasingly incompatible with the needs of Industry 4.0 and a diverse, innovation-focused society. This presentation highlights the findings of the landmark report, The Engineering Mindset: A Vision for Change, which advocates for a fundamental systemic overhaul of how engineers are educated in the United States.

**Biography:** Dr. Gary R. Bertoline is an Emeritus Dean and Distinguished Professor of Engineering Technology and Computer and Information Technology at Purdue University and is currently a Research Professor at Purdue. As the founding Dean of the Polytechnic Institute, he transformed undergraduate education to better prepare students for the digital age. He also established the Purdue Polytechnic High Schools in Indianapolis, supporting students from underserved communities by preparing them for STEM higher education and careers. Gary serves as the PI for a NSF grant with the National Academy of Engineering and the American Society for Engineering Education, developing a modern, accessible model for engineering education.

**NOVEMBER 11**
**8:00AM–8:45AM**



**Khairul Zaman**
*NASA Glenn Research Center*

**Presenting in Track 11: Fluids Engineering**

**Presentation Title: Turbulence We Cannot See: Measurement Limits in High-Speed Boundary Layers**

**Abstract:** Measurements form the foundation of turbulence research, yet the instruments used to obtain them inevitably impose constraints. In high-speed wall-bounded flows, these effects may be more consequential than generally recognized. Hot-wire measurements in fully turbulent exit boundary layers of nozzle flows often report turbulence intensities that appear unusually low. Such observations could be interpreted as evidence of compressibility effects, probe response limitations, or flow acceleration within the nozzle. However, a closer examination points to a different explanation: spatial averaging associated with the finite length of hot-wire probes. Analysis of experimental data, together with insights from low-speed boundary-layer studies reported in the literature, indicates that this spatial averaging leads to a reduction in the measured turbulence intensities. To further examine this effect, large eddy simulation (LES) is used to examine the influence of probe dimensions on the recorded statistics. The results show that small-scale turbulence near the wall is averaged over the length of the probe, leading to systematic underestimation of turbulence levels.

While the phenomenon is studied for nozzle exit flows, the implications extend well beyond a single configuration. Similar measurement limitations are likely present across a wide range of propulsion components and compressible boundary-layer flows at all Mach numbers, where accurately resolving near-wall turbulence remains a challenge for currently available measurement techniques. Addressing this challenge will require new measurement approaches that will reduce the probe dimensions from millimeters to microns.

**Biography:** Dr. Khairul Zaman is currently an Aerospace Engineer in the Aeropropulsion Division of NASA Glenn Research Center. He joined NASA in 1982, initially working at the Langley Research Center and moving to GRC in 1985.

Dr. Zaman received his Ph.D. degree in Mechanical Engineering from the University of Houston in 1978. His Ph.D. and postdoctoral work, under the mentorship of Professor Fazle Hussain, led to a series of publications addressing the dynamics of coherent structures in shear layers and jets. At NASA, Dr. Zaman continued and extended these studies to higher Mach number shear flows, particularly with respect to jet noise mechanisms and control. These studies played a pivotal role leading to chevron technology employed in modern jet engines, a technique for suppression of howl in ground test facilities, in addition to addressing such fundamental phenomena as transonic tones and excess broadband noise in overexpanded jets, guided jet waves and their impact on jet noise, and the effect of initial boundary layer state on jet noise and plume development. Over the years, he served as a member of many committees at GRC as well as various NASA-wide committees on turbulence research. He has been the mentor of several undergraduate interns, five graduate students, four post-doctoral fellows, and served as NASA colleague of four summer faculty fellows, many returning for multiple years. He has monitored about twelve University grants. He is a Fellow of the American Society of Mechanical Engineers (ASME), Fellow of the American Physical Society (APS), and Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA).

**NOVEMBER 12**
**8:00AM–8:45AM**



**Alejandro Roldán Alzate**
*University of Wisconsin–Madison*

**Presenting in Track 11: Fluids Engineering**

**Presentation Title: Lower Urinary Tract Biomechanics - Uro-Dynamic MRI**

**Abstract:** Multichannel urodynamics (UDS) with and without fluoroscopic imaging has been the gold standard for assessment of the bladder and the urethra. Dynamic MRI has successfully been used in several modalities to evaluate bladder biomechanics. Bladder function and specifically detrusor contraction has always been thought about as a deflating balloon, where the bladder uniformly and concentrically contracts. The goal of this study is to identify and characterize patterns in anatomical changes in the bladder during voiding using Uro-Dynamic MRI. During Uro-Dynamic MRI subjects are equipped with a condom catheter connected to a 1L bag attached to their leg for urine collection. Subjects are then instructed to void in the MRI scanner in a supine position. Acquired images are collected in a 3T MRI scanner (Premier, GE Healthcare, Waukesha, WI) using a high-density flexible array coil (AIR Coil, GE Healthcare) following the Uro-Dynamic MRI protocol. Protocol consists of a Differential Subsampling with Cartesian Ordering (DISCO) 3D acquisition sequence (Spatial Resolution=1 × 1 × 2, Slice Spacing = 1 mm, TE = 1.116, TR = 3.62, Flip Angle = 7) that images 41 timesteps. DICOM files are imported into MIMICS where one 3D segmentation of the bladder is semiautomatically performed at every time point within each voiding event (17 ± 4 timesteps in each voiding). Volume and surface area (SA) were collected for each 3D model of the bladder. The bladder volumes were then used to calculate flow rate and sphericity index. Urinary flow rate is calculated using the backward difference method while sphericity index used the SA of the bladder divided by the SA of a sphere with the same volume as the bladder, thus giving an indication of how “spherical” the bladder is at each timestep. So far, subjects recruited for this study exhibited large variations in flow rate characteristics allowing for a comprehensive characterization of bladder biomechanics and behavior during voiding. Sphericity index analysis has shown a distinct parabolic pattern indicating the bladder becoming “more spherical” and then returning to a “less spherical” state while emptying.

**Biography:** Alejandro Roldán-Alzate is an Associate Professor in the Departments of Radiology and Mechanical Engineering at the University of Wisconsin–Madison. Professor Roldán-Alzate is also the director of the Cardiovascular Fluid Dynamics Laboratory, which has the main interest of coupling engineering tools with medical imaging to noninvasively characterize the hemodynamics in different physiological and pathological conditions. More recently, Dr. Roldán-Alzate has worked on developing noninvasive ways of assessing the biomechanics of the lower urinary tract using MRI in combination with computational fluid dynamics. He uses advanced optical imaging and computational fluid dynamics for enhancement and validation of quantitative flow imaging including 4D Flow MRI. Critical validation of Flow MRI metrics as well as enhancing their quantitative power is crucial for the future of clinical Flow MRI. Finally, Dr. Roldán-Alzate is the past chair of the fluid dynamics technical committee in the biofluids division of the American Society of Mechanical Engineers.

**NOVEMBER 10**
**8:00AM–8:45AM**



**Kenneth Goodson**
*Stanford University*

**Presenting in Track 12: Heat Transfer and Thermal Engineering**

**Presentation Title: Materials Innovations for Microfluidic and Conductive Cooling of Electronic Systems:**

**Abstract:** Novel materials and fabrication technologies are the hallmark of thermal management solutions across electronic systems, from data centers and power electronics to portables. The stakes are rising with AI projected to drive a dramatic increase in data center power demand by 2030, and with nearly 20% of U.S. data center power consumption dictated by cooling. Advances in IC-compatible synthesis, additive manufacturing, electrodeposited nanostructures, and metal-organic frameworks are enabling 1) high thermal conductivity materials, 2) fabrication techniques that integrate thermal solutions within packaging and 3D chips, and 3) surface micro/nanostructures that enhance microfluidic cooling by refining phase change, capillary, or conjugate physics. This talk describes the virtuous cycle of materials engineering and heat transfer research, and advances to expect in the years ahead.

**Biography:** Ken Goodson is the Vice Provost for Graduate Education & Postdoctoral Affairs and the Davies Family Provostial Professor at Stanford University, where he holds appointments in Mechanical Engineering and (by courtesy) Materials Science and Engineering. His 60 Ph.D. graduates are distributed among IC companies and professorships at schools including MIT, Princeton, Stanford, UC Berkeley, UIUC, Purdue, and UCLA. Goodson is a member of the National Academy of Engineering and a Fellow with ASME, IEEE, APS, AAAS, and the National Academy of Inventors (NAI). Awards include the ASME Kraus Medal, the inaugural IEEE Richard Chu Award, the 2017 InterPACK Achievement Award, the AIChE Kern Award, and the SRC Aristotle, Technical Excellence, and University Researcher Awards. Goodson has 35 patents and co-founded Cooligy, which built heat sinks for Apple desktops. He served formerly as Stanford Mechanical Engineering Chair and recruited 15 faculty who transformed the department's scholarship and diversity.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Gamal Refai-Ahmed**
*AMD*

**Presenting in Track 12: Heat Transfer and Thermal Engineering**

**Presentation Title: From Chip to AI Factory: A Five-Year Roadmap for Silicon Suppliers and Hyperscalers**

**Biography:** Dr. Gamal Refai-Ahmed is a senior technical executive and internationally recognized leader in thermal management, silicon power architecture, and advanced packaging for AI, high-performance computing, telecommunications, and aerospace systems. Over more than three decades at AMD, Xilinx, GE Global Research, Cisco, and Nortel, he has pioneered solutions that define how heat, power, and data are managed in today's most demanding platforms.

Dr. Refai-Ahmed is an elected Member of the U.S. National Academy of Engineering and a Fellow of IEEE, ASME, the Canadian Academy of Engineering, and the Engineering Institute of Canada. His contributions span over 160 patents and more than 120 publications, advancing the state of the art in electronics cooling, thermal interface materials, heterogeneous integration, and system-level thermomechanical design. His work has earned numerous honors, including the University of Waterloo Distinguished Alumni Professional Achievement Medal and the Binghamton University Presidential Medal. Professional societies have recognized his leadership with awards such as the ASME Service Award, Calvin Lecture Award, and Excellence in Thermal Management (Allan Kraus) Award, as well as the IEEE Canada R.H. Tanner Industrial Leadership Silver Medal. He has also been elevated to ASME Fellow and later ASME Life Fellow.

Dr. Refai-Ahmed holds a B.Sc. and M.Sc. in Mechanical Engineering from Alexandria University and a M.A.Sc. and Ph.D. from the University of Waterloo. Today, he continues to work at the intersection of industry, academia, and government, driving innovation for energy-efficient, intelligent systems that power the future.

**NOVEMBER 10**
**8:00AM–8:45AM**



**Huajian Gao**
*Tsinghua University*

**Presenting in Track 13: Mechanics of Solids, Structures, and Fluids**

**Presentation Title: Progress in Mechano-X: Overcoming Material Property Trade-offs via Bio-inspired Strategies**

**Abstract:** A central challenge in materials science is the persistent trade-off between mutually conflicting properties, such as strength and ductility, stiffness and toughness, or density and compliance. While these limitations often hinder traditional engineering, biological systems circumvent these dilemmas through sophisticated, hierarchical structures from molecular to macroscopic scales. This talk presents recent progress in designing bio-inspired materials that achieve unprecedented all-around performance by translating these biological principles into programmable engineering functions for healthcare, soft robotics, and flexible electronics.

Building on these breakthroughs, we propose "Mechano-X" as a transformative paradigm for interdisciplinary innovation. Unlike "X-Mechanics," which often uses mechanics as a descriptive tool to explain phenomena in other fields, Mechano-X represents "Mechanics for X." In this proactive mode, mechanics serves as a foundational design language, utilizing the synergistic relationship between force, geometry, and property to regulate and program target systems. This framework is currently driving evolution across diverse frontiers: Mechanobiology (e.g., mechanotransduction and regenerative medicine), Mechanochemistry (e.g., force-driven chemical reactions and mechanophores), and Mechanomaterials (e.g., gradient nanostructures and metamaterials). The "X" in this paradigm is interpreted broadly: it represents specific disciplines, national strategic needs, grand challenges, or simply curiosity-driven inquiries. This philosophy is encapsulated in the mission: "Mechano-X: Mechanics for X, and Mechanics for Fun." By integrating mechanics with artificial intelligence and advanced manufacturing, the Mechano-X approach ensures that "mechanism precedes performance," providing the physical judgment necessary to create reliable, multifunctional systems. Ultimately, Mechano-X demonstrates that mechanics does not merely explain the natural world—it actively participates in creating it.

**Biography:** Professor Huajian Gao is currently the Xinghua Distinguished University Professor and Director of the Mechano-X Institute at Tsinghua University, as well as the Walter H. Annenberg Professor Emeritus of Engineering at Brown University. He earned his B.S. in Engineering Mechanics from Xi'an Jiaotong University in 1982 and his M.S. and Ph.D. in Engineering Science from Harvard in 1984 and 1988, respectively. He served on the faculty of Stanford University from 1988 to 2002, followed by appointments as Director at the Max Planck Institute for Metals Research (2001–2006), Walter H. Annenberg Professor of Engineering at Brown University (2006–2019), and Distinguished University Professor at Nanyang Technological University (2019–2024).

Professor Gao's research focuses on the understanding of fundamental principles that govern the mechanical properties of materials in both engineering and biological systems. His accolades include elections as Fellow of the Royal Society and memberships in U.S. National Academy of Sciences, U.S. National Academy of Engineering, American Academy of Arts and Sciences, German National Academy of Sciences Leopoldina, Chinese Academy of Sciences, and Academia Europaea. He has also received the Rodney Hill Prize, Timoshenko Medal, and ASME Medal, the highest lifetime achievement awards in his field.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Yonggang Huang**
*Northwestern University*

**Presenting in Track 13: Mechanics of Solids, Structures, and Fluids**

**Presentation Title: Bioelastic State Recovery for Haptic Sensory Substitution**

**Abstract:** The rich set of mechanoreceptors found in human skin offers a versatile engineering interface for transmitting information and eliciting perceptions, potentially serving a broad range of applications in patient care and other important industries. Targeted multisensory engagement of these afferent units, however, faces persistent challenges, especially for wearable, programmable systems that need to operate adaptively across the body. Here we present a miniaturized electromechanical structure that, when combined with skin as an elastic, energy-storing element, supports bistable, self-sensing modes of deformation. Targeting specific classes of mechanoreceptors as the basis for distinct, programmed sensory responses, this haptic unit can deliver both dynamic and static stimuli, directed as either normal or shear forces. Systematic experimental and theoretical studies establish foundational principles and practical criteria for low-energy operation across natural anatomical variations in the mechanical properties of human skin. A wireless, skin-conformable haptic interface, integrating an array of these bistable transducers, serves as a high-density channel capable of rendering input from smartphone-based 3D scanning and inertial sensors. Demonstrations of this system include sensory substitution designed to improve the quality of life for patients with visual and proprioceptive impairments.

**Biography:** Yonggang Huang is the Achenbach Professor of Engineering at Northwestern University. He is interested in mechanics of stretchable inorganic electronics and mechanics-guided deterministic 3D assembly. He is a member of the National Academy of Engineering, National Academy of Sciences, American Academy of Arts and Sciences, and a foreign member of Royal Society (London), Royal Academy of Engineering, Royal Society of Canada, and Chinese Academy of Sciences. In 2024, the Society of Engineering Science established the Yonggang Huang Engineering Science Medal. In 2025, the Hagler Institute for Advanced Study at Texas A&M University established the John Rogers – Yonggang Huang Medal for Research Collaboration. In the same year, the International Conference of Computational & Experimental Engineering and Science established the John Rogers/Yonggang Huang Medal.

**NOVEMBER 10**
**8:00AM–8:45AM**



**Taher Saif**
*University of Illinois at Urbana-Champaign*

**Presenting in Track 14: Micro- and Nano-Systems Engineering and Packaging**

**Presentation Title: MEMS Sensors: Probing Nanomaterials to Living Neurons**

**Abstract:** Microelectromechanical systems (MEMS) have revolutionized a wide range of technologies since the 1990s, including automotive airbags, digital light displays, and navigational guidance systems. Their success stems from their small size, batch fabrication, and seamless integration with electronics. This revolutionary approach to making small devices has also paved the way for miniature sensors and instruments capable of conducting fundamental scientific studies at low cost and with exceptionally high resolution, thereby helping democratize access to advanced experimental capabilities.

Here, we will discuss one such MEMS-based sensor. The device consists of a force-sensing spring and an anchor, with the sample positioned between them. The sample can be integrated directly with the sensor during fabrication, as in the case of nanoscale thin films, or it can self-assemble with the sensor, as occurs with soft biological materials containing living cells. Such integration and self-assembly eliminate the challenges associated with handling, positioning, and aligning extremely small or delicate samples with a force sensor.

The sensor's small size provides another important advantage: it enables direct *in situ* observation of the sample inside advanced analytical instruments, including high-resolution optical and electron microscopes. Mechanical measurements can therefore be correlated directly with structural changes in the sample, providing new opportunities to uncover the fundamental mechanisms governing material deformation and cellular behavior. We have applied this sensor platform to two distinctly different classes of materials. The first involves nanograined metallic thin films subjected to uniaxial tension. These experiments revealed the surprising observation that plastic deformation in nanograined metals can be reversible with time, providing new insight into deformation mechanisms at the nanoscale.

The second application involves living neurons embedded within an extracellular matrix. Studies of hippocampal neurons derived from mouse brain show that, as neurons establish connections with one another, they become contractile and generate a mechanically tensed neuronal network. This tension is not simply a consequence of network formation; it appears to be essential for neuronal function and for the transmission of information between neurons. These findings suggest that the long-standing electrochemical view of brain function should be expanded to include mechanical tension as a third fundamental component, alongside biochemical signaling and electrical activity. Recognizing this mechanical dimension of neuronal function may provide a new framework for understanding the brain and could ultimately open new avenues for investigating and treating neurological disorders, including dementia and Alzheimer's disease.

**Biography:** Professor Saif was born in Dhaka, Bangladesh. He earned B.S. and M.S. degrees in Civil Engineering from Bangladesh University of Engineering and Technology and Washington State University, followed by a Ph.D. in Theoretical and Applied Mechanics at Cornell University. He conducted postdoctoral research on MEMS at Cornell Electrical Engineering before joining the Department of Mechanical Science and Engineering at the University of Illinois Urbana-Champaign (UIUC) in 1997. His interdisciplinary work spans mechanics of neurons and cardiac cells, tumor microenvironments, biohybrid robotics, and nanomaterials. Professor Saif is a Fellow of the American Society of Mechanical Engineers (ASME) and the American Association for the Advancement of Science (AAAS). He received the 2018 Koiter Medal from American Society of Mechanical Engineers, and the 2020 Engineering Science Medal from the Society of Engineering Science. In 2024, he was elected to the National Academy of Engineering of USA. He was endowed with Grainger Distinguished Chair in 2025 in the Grainger College of Engineering, UIUC.

**NOVEMBER 11**
**8:00AM–8:45AM**



**Xinyan Tracy Cui**
*University of Pittsburgh*

**Presenting in Track 14: Micro- and Nano-Systems Engineering and Packaging**

**Presentation Title: Microelectrode Arrays Towards Multimodal and Chronic Neural Interfaces**

**Abstract:** Microfabricated microelectrode array (MEA) devices, implanted in the nervous system to record and modulate neural activity, have become invaluable tools for neuroscience research and neural prosthetic applications. Extending MEAs with neurochemical sensing and targeted drug delivery introduces new dimensions of information exchange and therapeutic capability, with the potential to advance both our understanding of neural circuits and the treatment of neurological disorders.

In this talk, I will present our strategies for fabricating MEAs and enabling chemical sensing and controlled drug delivery. By incorporating nanocarbon materials into conducting polymer coatings, we have achieved direct detection of electroactive species, including dopamine, melatonin, and serotonin. Immobilizing enzymes and aptamers on nanostructured electrodes further enabled multisite detection of glutamate, GABA, and cocaine. In addition, integrating nanocarriers into electrode coatings enables electrically controlled, site-specific drug release. Our multimodal neural probes demonstrate the ability to simultaneously record neural activity while detecting and delivering multiple neurochemicals in free-behaving animals.

Currently, long-term performance of neural interface devices is suboptimal. To understand and address the challenges associated with long-term implantation, we combine quantitative histology, explant analysis, and two-photon imaging to investigate the mechanisms underlying performance degradation, including biofouling, inflammatory responses, and material failure. We then apply complementary biomaterial strategies to improve long-term device performance. First, designing devices with mechanical properties that better match those of neural tissue can promote tissue integration and reduce mechanical damage. Second, biomimetic coatings and localized drug delivery can mitigate inflammatory responses and biofouling at the device–tissue interface. Together, these approaches advance the development of long-term, high-fidelity, multimodal neural interfaces capable of not only recording and modulating neural activity but also monitoring and manipulating the *in vivo* neurochemical environment.

**Biography:** Dr. Cui is the George M. and Eva M. Bevier Professor of Bioengineering at the University of Pittsburgh. Dr. Cui earned her B.E. in Polymer Materials and Chemical Engineering and her M.S. in Biophysics at Tsinghua University in Beijing, China. She went on to earn her Ph.D. in Macromolecular Science and Engineering at the University of Michigan, Ann Arbor, Michigan. Her lab explores the intricate interactions between neural tissues and neural implants, simultaneously developing advanced materials and devices for neural recording and modulation, chemical sensing, drug delivery, and neural tissue engineering, all to advance neuroscience research and therapeutic interventions. Dr. Cui has published extensively, has received more than 17,000 citations for her publications, and holds nine patents (two licensed to industry). For her significant research and technological contributions, she has won numerous honors and awards, including Fellow of the American Institute for Medical and Biological Engineering (2015), Fellow of the Royal Society of Chemistry (2017), and Senior Member of the National Academy of Innovators (2024), the 2015 Carnegie Science Emerging Female Scientist Award, the 2008 NSF Career Award, and the 2005 Wallace Coulter Translational Research Career Award.

**NOVEMBER 9**
**8:00AM–8:45AM**



**Robert E. (Bob) Schuetz**
*Energy Northwest*

**Presenting in Track 15: Power Symposium**

**Biography:** Bob Schuetz became CEO of Energy Northwest in August 2021 after serving as site vice president at Columbia Generating Station since 2018. He joined Energy Northwest as Maintenance manager in 2013 and was promoted to plant general manager for Columbia Generating Station in 2014. Before joining Energy Northwest, he served as a plant evaluation team leader for the Institute of Nuclear Power Operations (INPO), concluding his INPO tenure on temporary-loan assignment to Energy Northwest.

Bob is a 28-year U.S. Navy veteran who retired from service as the deputy commander and chief of staff for the U.S. Pacific Fleet Submarine Force where he oversaw more than 7,000 service members operating 36 ships from four bases. Bob holds a bachelor's degree in nuclear engineering from Rensselaer Polytechnic Institute, a master's in engineering management from Old Dominion University and a master's in economics from the University of Oklahoma, as well as senior reactor operator management certificates from Energy Northwest and Westinghouse.

Energy Northwest develops, owns, and operates a diverse mix of electricity generating resources, including hydro, solar, battery storage and wind projects—and the Northwest's only nuclear power facility. These projects provide carbon-free electricity at the cost of generation—enough clean, cost-effective, and reliable energy to power more than a million homes each year. As an independent joint operating agency of Washington state, Energy Northwest comprises 29 public power member utilities from across the state serving more than 1.5 million customers. The agency continually explores new generation projects to meet its members' needs.

**NOVEMBER 10**
**8:00AM–8:45AM**



**Majid Bahrami**
*Simon Fraser University*

**Presenting in Track 15: Power Symposium**

**Biography:** Dr. Majid Bahrami is a Professor in the School of Mechatronic Systems Engineering at Simon Fraser University, Canada Research Chair in Alternative Energy Conversion Systems. He was awarded Canada's Clean50 in 2016. His research group studies transport phenomena in emerging microstructured materials and porous media, fuel cell technologies, new refrigeration, and microelectronics cooling with a focus on sustainable energy conversion systems. This multifaceted research requires combined expertise in heat transfer, fluid flow, materials science, and contact mechanics, and has a focus on both fundamentals and contemporary industrial applications. Bahrami (Sharif B.Sc. 1992, Amirkabir M.Sc. 1995, Waterloo Ph.D. 2004, Waterloo Post-doc 2004–2006) has authored/co-authored more than 100 journal and conference articles. Dr. Bahrami practiced for five years (1995–2001) in the HVAC and refrigeration industry as a thermal engineer and consultant. From 2006 to 2008, Bahrami served as an Assistant Professor in the Department of Mechanical Engineering, University of Victoria, British Columbia. He is Fellow of ASME, Fellow of CAE, and member of AIAA, ASHRAE, SAE, and CSME.

**NOVEMBER 11**
**8:00AM–8:45AM**



**Ali Mosleh**
*University of California in Los Angeles (UCLA)*

**Presenting in Track 16: Safety Engineering, Risk and Reliability Analysis**

**Presentation Title: Risk Analysis with No Data: The Art and Science of Using Expert Opinion**

**Abstract:** It is hard to find a risk or reliability analysis that does not rely on some form subject matter expert opinion, a fact that is often cited as a weakness and source of doubts about the credibility of such analyses. This talk examines the technical challenges we often face in using expert judgment and provides an overview of theoretical studies and empirical findings that can help address some of these challenges.

**Biography:** Ali Mosleh is Distinguished University Professor and holder of the Evalyn Knight Endowed Chair in Engineering at the University of California in Los Angeles (UCLA), where he is also the Inaugural Director of the B. John Garrick Institute for the Risk Sciences. He also holds honorary professorships at several universities worldwide. Prior to joining UCLA, Professor Mosleh was the Kim Chair Professor and Director of the Center for Risk and Reliability at the University of Maryland. He conducts research on methods for risk and reliability analysis of complex systems and has made many contributions in diverse fields of theory and application. He holds several patents, and has edited, authored, or co-authored over 800 publications including books, guidebooks, and technical papers. Dr. Mosleh was elected to the U.S. National Academy of Engineering in 2010 and is a Fellow of IEEE, the Society for Risk Analysis, and the American Nuclear Society. Prof. Mosleh is the recipient of many scientific achievement awards and has been a technical advisor to numerous national and international organizations.

**NOVEMBER 12**
**8:00AM–8:45AM**



**Faisal Khan**
*Texas A&M University*

**Presenting in Track 16: Safety Engineering, Risk and Reliability Analysis**

**Presentation Title: Is Risk Analysis a Science, an Art, or Both?: A Perspective**

**Abstract:** Process safety has advanced significantly; however, contemporary risk analysis (RA) remains fragmented, relying on tools that treat temporal, spatial, and event-driven risks as disconnected attributes. This paper introduces a transformative physics-inspired framework that unifies these dimensions by treating risk as a system-level state variable, governed by a balance law. Drawing a direct mathematical analogy to the Reynolds Transport Theorem, we present a novel advection-diffusion-source-sink model where risk density evolves according to a "risk velocity field" and a "risk potential" that aggregates hazard intensity, exposure, and vulnerability. This foundational framework provides a rigorous scientific bridge between qualitative expert judgment and quantitative physical laws, enabling a shift from static, scenario-based assessments to continuous, adaptive risk management in complex industrial environments.

**Biography:** Dr. Faisal Khan is Mike O'Connor Chair II professor and interim department head of chemical engineering at Texas A&M University, College Station, Texas. He is the Director of Mary Kay O'Connor Process Safety Center and Director of Ocean Energy Safety Institute (OESI).

Before moving to Texas, Dr. Khan served as Associate Dean (Graduate Studies) and Canada Research Chair (Tier I) of Offshore Safety and Risk Engineering at Memorial University of Newfoundland, Canada. He founded the Centre for Risk Integrity and Safety and Engineering (C-RISE), which has over 100 research members. He established the Department of Process Engineering at Memorial University and served as founding Chair/Head from 2011 to 2019. He led the department in two successful Canadian Engineering Accreditation cycles.

Dr. Khan's research interests include Energy Safety, offshore safety, extreme event modeling, and risk engineering. He has received many national and international awards. He continues to serve as a subject-matter expert for many multinational oil and gas companies and processing companies on issues of safety, risk, and asset integrity. He also served as Safety and Risk Advisor to the Government of Newfoundland, Canada; the Ministry of Environment, Government of Qatar; and the Ministry of Environment, Government of Peru. He is a Fellow of the Canadian Academy of Engineers. He has authored over 700 research articles in peer-reviewed journals (H-index 105) and mentored 29 postdoctoral fellows, 101 PhDs, and 95 master students. He is Editor-in-Chief of the *Journal of Process Safety & Environmental Protection and Safety in Harsh Environments*.

**NOVEMBER 10**
**8:00AM–8:45AM**



**Cynthia Hipwell**
*Texas A&M University*

**Presenting in Track 17: Symposium on Tribology: Advances and Applications**

**Presentation Title: The Tribology of Touch for Human and Robot Fingers**

**Abstract:** The U.S. is facing labor shortages, particularly in areas that require difficult manual work, such as manufacturing, food processing, and caregiving. “Augmentation,” the integration of humans and automation, is a potential solution, but it is currently limited to large factories and repeated tasks due to the expertise required to program and integrate robots as well as the limitations of specialized end effectors, or the robot’s “hands.” Our human hands allow us to perform a wide variety of dexterous manipulation tasks and use a vast array of tools in our work. For augmentation to be successful, we need dramatic improvement in the hardware (hands), software (skills), and human interface of dexterous robots.

Looking at human dexterity and its enablers, the finger-device interface is important, with its complex contact mechanics driving the ability to sense force, contact area, and friction/slip as well as have stable control during both griping and sliding manipulative tasks. Much of this is enabled by human skin – both its unique and complex material properties as well as the four different types of mechanoreceptors that sense mechanical interactions during dexterous tasks and tactile exploration. This talk will explore the contact mechanics of human and robotic finger-device interfaces, important both to the capability of the robot’s hands and to the haptic human interface designs that will enable the human to teach the robot tasks. It will cover the multiphysics of the touch interface, the contact mechanics of tactile roughness perception, design of novel actuators for hands, as well as bioinspired design of robot skins.

**Biography:** Cynthia Hipwell has been working in the area of technology development based upon nanoscale phenomena for over 30 years. She received her B.S.M.E. from Rice University and her M.S. and Ph.D. in Mechanical Engineering from the University of California, Berkeley. Upon graduation, she went to work at Seagate Technology’s Recording Head Division in Bloomington, MN. During her nearly two decades at Seagate, she held multiple individual contributor and leadership roles including Executive Director of Advanced Mechanical Technology and Executive Director of Advanced Transducer (Electrical) Development, leading the electrical feasibility demonstration of heads for the radical new recording technology Heat Assisted Magnetic Recording (HAMR). In these various roles, she established new business processes and an organizational culture that focused on developing innovative solutions from root cause understanding. She was inducted into the National Academy of Engineering for “leadership in the development of technologies for areal density increase in hard disk drives” in 2016 as well as the National Academy of Inventors in 2018. In 2017, she joined the faculty of Texas A&M where she currently serves as the Oscar S. Wyatt, Jr. ’45 Chair II in Mechanical Engineering and Deputy Director of the Human AugmentatioN via Dexterity (HAND) NSF Engineering Research Center (ERC). She has developed unique curricula in innovation and new product development for students, faculty, and industry, and is conducting research in nano and microscale phenomena in the finger-device interface for haptics and dexterous robotics.

# Special Events



## SUNDAY, NOVEMBER 8

**PROFESSIONAL DEVELOPMENT WORKSHOP FOR UNDERGRADUATE, GRADUATE STUDENTS, AND VERY EARLY CAREER RESEARCHERS**
**1:00PM–2:00PM**
**118 WEST CONVENTION CENTER**

Learn and grow in the following areas: How to make professional connections and maintain through social media and Enhancing professional writing and speaking/presentation skills and other “soft skills”

**FIRST-TIME ATTENDEE ORIENTATION**
**2:00PM–3:00PM**
**121 WEST CONVENTION CENTER**

First-time attendees to IMECE are cordially invited to this informal yet informative session to learn about how to navigate the conference, how to use the program, the new App, and more importantly, where all the best parties are. Snacks and refreshments will be served.

**ELEVATOR PITCH COMPETITION AND STUDENT NETWORKING RECEPTION**
**4:00PM–6:00PM**
**OCEAN FOYER, ROOM 119 WEST CONVENTION CENTER**

**Sponsored by the ASME Old Guard Committee**

**Undergraduate Reception:**
This welcoming reception is open to all and is your opportunity to expand your network, exchange ideas, and learn about opportunities for you at ASME. Bring your questions, introduce yourself to new people, and discover how involvement in the engineering community can support your future. Join us to build relationships that can continue beyond IMECE and throughout your engineering journey ahead!

**Elevator Pitch Competition:**
Do you want to show off your speaking skills and/or power of persuasion? Do you want to introduce an idea succinctly? If yes, then show us your imagination and join us for the ASME Elevator Pitch Competition. An elevator pitch of 90 seconds or less is intended to “sell” your ideas and skillset to a potential employer, decision maker, or influencer. You only need to provide enough details during the presentation to entice your audience to meet with you again for a more detailed conversation. In other words, you want to compel the audience to bring you back for a further conversation.

## MONDAY, NOVEMBER 9

### EXHIBIT HALL GRAND OPENING AND OPENING RECEPTION
**5:30PM–7:00PM**
**WEST BALLROOM, CONVENTION CENTER**

All registrants are invited to this special event to celebrate the opening of the IMECE exhibits. Come grab a drink and some food, meet this year's group of exhibitors, and learn about their products and services.

### UNDERGRADUATE RESEARCH AND DESIGN EXPO STUDENT POSTER COMPETITION
**5:30PM–7:00PM**
**WEST BALLROOM, CONVENTION CENTER**

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|---|---|
| Poster Setup | 2:00PM–4:00PM |
| Judging | 4:00PM–6:15PM |
| Expo (General Viewing) | 5:30PM–7:00PM |

The student expo provides undergraduate engineering students with a professional and technical forum for presenting their research, design project, and other engineering solutions and endeavors to top researchers and scientists from academia, industry, government, prospective employers, entrepreneurs graduate schools, and potential faculty advisors.

### MEET-UP AND NETWORKING AT THE REC ROOM
**7:30PM–9:00PM**

ElevateMe

Extend the networking opportunities into the evening at our casual meet-up reception, where you can relax and connect with industry peers in a more informal setting.

*Pre-registration required.

## TUESDAY, NOVEMBER 10

### PANEL ON CMMI RESEARCH OPPORTUNITIES
**8:50AM–10:35PM**
**ROOM 221/222, WEST CONVENTION CENTER**

Representatives from the Civil, Mechanical and Manufacturing Innovation (CMMI) Section of the US National Science Foundation (NSF) will introduce Sectional and Foundation-wide funding opportunities to CMMI communities of researchers and have a live Q&A with audience. This session will be of greatest benefit to current faculty members (all ranks) at US Institutions.

**CMMI Representatives: Alena Talkachova, Kiran Solanki, Siddiq Qidwai**

### PANEL ON CBET RESEARCH OPPORTUNITIES
**2:15PM - 4:00PM**
**ROOM 221/222, WEST CONVENTION CENTER**

Representatives from the Chemical, Bioengineering, Environmental, and Transport Systems (CBET) Section of the US National Science Foundation (NSF) will introduce Sectional and Foundation-wide funding opportunities to CBET communities of researchers and have a live Q&A with the audience. This session will be of greatest benefit to current faculty members (all ranks) at US Institutions.

**CBET Representatives: Shahab Shojaei-Zadeh**

### PROPOSAL WRITING WORKSHOP:
**4:00PM – 5:30PM**
**ROOM 221/222, WEST CONVENTION CENTER**

In this workshop, US National Science Foundation (NSF) program directors will cover the fundamentals of grant proposal writing for NSF. Participants will learn about key topics, including the components of a successful proposal and finding the right home for the research. Critical aspects of the merit review process will be presented. This workshop is geared towards early career and aspiring investigators at US institutions seeking to understand the NSF merit review process, although the information provided will be valuable to principal investigators at any stage of their career seeking to learn more about proposal writing.

**NSF Representatives: Alena Talkachova, Kiran Solanki, Shahab Shojaei-Zadeh, Siddiq Qidwai**

### RISING STARS OF MECHANICAL ENGINEERING
**1:15PM–2:15PM**
**WEST BALLROOM, WEST CONVENTION CENTER**

The ASME Rising Stars of Mechanical Engineering Celebration and Showcase at the International Mechanical Engineering Congress and Exposition (IMECE) is a prestigious event designed to honor early-career researchers who have received recognition through NSF CAREER, ONR YIP, AFOSR YIP, DARPA YFA, and NIH New Innovator Awards.

This reception-style celebration commences with a brief introduction, followed by a poster session during which Principal Investigators (PIs) are invited to present their innovative work. Subsequently, a networking period allows PIs to connect with their peers and other professionals in the field.

East Hall, Convention Center

| | |
|---|---|
| Poster Setup | 9:00AM–10:00AM |
| General Viewing | 1:15PM–2:15PM |
| Recognition Announcements | 2:00PM–2:15PM |

## WEDNESDAY, NOVEMBER 11

### ONE-ON-ONES WITH NSF PROGRAM DIRECTORS
**NOVEMBER 11TH, 9:50AM – 11:50AM AND 2:00PM – 4:00PM**

Faculty members at US institutions will have an opportunity to discuss specific research concepts with Program Directors from the following National Science Foundation (NSF) core research programs:

- Advanced Manufacturing, Design and Operations (AMDO)
- Foundational Research in Robotics (FRR)
- Intelligent and Interactive Dynamic Systems (IIDS)
- Mechanics of Advanced Materials Systems (MAMS)
- Transport Phenomena (TP)

The meeting time of 20 minutes demands that the PIs come prepared with their talking points.

Pre sign up required

### GOVERNMENT AGENCY AND RESEARCH POSTER SESSION
**12:00PM–2:00PM**
**WEST BALLROOM**

Undergraduate and graduate students are invited to present and/or compete with their posters based on work from NSF-funded research. This forum provides the students with an opportunity to disseminate their research to their junior, peer, senior, and experts-in-the-field colleagues. IMECE provides a unique environment for students to interact with fellow researchers from single-focus, multidisciplinary, and/or international backgrounds. The track is divided into the topics of (1) NSF-funded research grants/programs and (2) Research Experience for Undergraduates (REUs).

| | |
|---|---|
| Poster Setup: | 9:00AM–10:00AM |
| Judging: | 10:00AM–1:45PM |
| General Viewing: | 12:00PM–2:00PM |
| Research Winners Announced: | 1:55PM |

**WOMEN IN ENGINEERING & EARLY CAREER DISCUSSION AND RECEPTION**
**ROOM 211 – WEST CONVENTION CENTER**
**WEDNESDAY, NOVEMBER 11, 2026, AT 6:00-7:30**

**Building Your Professional Voice, Network, and Impact**

**Panel/Roundtable: ASME – Women in Engineering & Early Career – Building Your Professional Voice, Network, and Impact**

**Program Description**

Engineering careers are shaped not only by technical expertise, but also by the ability to communicate ideas, build meaningful professional relationships, and recognize opportunities for growth. This session begins with a dynamic panel featuring women leaders and professionals across career stages and sectors who will share their experiences and perspectives on developing a professional voice, building networks, navigating career transitions, and creating impact in engineering. Following the panel, participants will join themed roundtable discussions to dive deeper, ask questions, exchange experiences, and gain practical insights on mentorship and sponsorship, professional visibility, networking, leadership development, and career growth. The session will conclude with an informal networking opportunity, allowing participants to continue conversations initiated during the panel and roundtables and strengthen connections across career stages.

Whether you are entering the profession, navigating an early-career transition, or advancing toward greater technical and leadership responsibilities, this program will provide opportunities to learn from diverse career experiences, strengthen professional connections, and explore pathways for continued growth and impact.

**CLOSING RECEPTION**
**PINNACLE HOTEL, CORDOVA BALLROOM, LEVEL A**
**3:10PM–4:10PM**

# Awards Lectures



## MONDAY, NOVEMBER 9

**RAYLEIGH LECTURE**
**5:15PM–6:15PM**
**ROOM 109**



**Guoliang Huang**
*Xin'ao Chair Professor*
*Department of Mechanics and Engineering Science*
*Peking University, Beijing, China*

## TUESDAY, NOVEMBER 10

**RALPH COATS ROE MEDAL**
**8:00AM–8:45AM**
**ROOM 213**



**Guru Madhavan, Ph.D.**
*National Academy of Engineering*

For distinguished contributions and leadership in advancing the public appreciation of engineering, fostering critical dialogue on its societal impact through compelling writings, lectures, and international engagement.

**KOITER LECTURE**
**5:30PM–6:30PM**
**ROOM 109**



**David Steigmann, Ph.D.**
*University of California Berkeley*

For sustained and fundamental contributions to solid mechanics in the areas of surface elasticity, finite elasticity theory, and the rigorous and consistent derivation of Koiter's shell theory from 3D elasticity theory.

## WEDNESDAY, NOVEMBER 11

**PER BRUEL GOLD MEDAL FOR NOISE CONTROL AND ACOUSTICS**
**5:00PM–6:00PM**
**ROOM 215/216**



**Dan Zhao, Ph.D.**
*University of Canterbury*

For groundbreaking discoveries enabling control of carbon-free-fueled thermoacoustic instabilities; and for inventing transformative actively passive noise control methods and computational tools that yield quieter, cleaner aerospace and energy technologies.

**MATERIALS DIVISION AWARDS RECEPTION/LECTURE**
**2:00PM–5:00PM**
**ROOM 224**

**Nadai Medal**



**Samuel Forest, Ph.D.**
*Mines Paris PSL University*

For pioneering material models at the mesoscopic scale that incorporate detailed microstructure description, characteristic lengths in crystalline solids, physical viscoplasticity, and damage mechanisms in engineering metallic alloys, with a view to lifetime prediction and full field experimental validation.

**Sia Nemat-Nasser Early Career Award**



**Anna Tarakanova, Ph.D.**
*University of Connecticut*

For foundational advances in the mechanical characterization and multiscale description of biomaterials, uniting analytical theory, computational methods, and experiments; and for sustained leadership in the mechanics and materials communities.

**Material Division Mid-Career Award:** Cunjiang Yu, University of Illinois - Urbana Champaign

**Orr Early Career Award:** Shaoting Lin, Michigan State University

**ASME Journal of Engineering and Science in Medical Diagnostics and Therapy Best Paper Award:** "Computational Simulation of the Hemodynamics in an Anatomic Carotid Artery Model: A Biphasic Blood Model," Mariana Ferreira, Violeta Carvalho, Diana Pinho, Rui Lima, Senhorinha Teixeira, and Armando A. Soares

## THURSDAY, NOVEMBER 12

**AYYUB-WIECHEL RISK ANALYSIS AWARD**
**8:00AM–8:45AM**
**ROOM 122**



**Faisal Khan, Ph.D.**
*Texas A&M University*

For pioneering contributions to risk, reliability, and safety engineering through foundational advances in probabilistic risk analysis; and for outstanding leadership translating research into practice by building global institutions that strengthen the safety of offshore, process, and emerging energy systems

**THURSTON LECTURE**
**8:00AM–8:45AM**
**ROOM 201**



**Guy M. Genin, Ph.D.**
*Washington University in St. Louis*

**Lecture Topic:** Harnessing Nanomaterials for Health Innovation

**Lecture Title: The Mechanics of Living Interfaces**

**Biography:** Guy M. Genin studies the mechanics of living interfaces: how tissues attach, how cells read the forces around them, and how that mechanics can be engineered into treatments. He is the Harold and Kathleen Faught Professor of Mechanical Engineering at Washington University in St. Louis, with appointments in Biomedical Engineering, Neurological Surgery, and Surgery. His work on the tendon-to-bone attachment established the modern understanding of how nature joins dissimilar materials and led to new surgical repair strategies; his work on cell-matrix mechanics showed that cells respond to the anisotropy and history of the stresses they carry, with consequences for fibrosis and wound healing; and his work on device-tissue mechanics underlies catheter technologies licensed to two companies he co-founded, Caeli Vascular (Chief Engineer) and Vascorra (CTO). Genin co-founded and co-directs the NSF Science and Technology Center for Engineering MechanoBiology, a $50M center, one of 14 NSF STCs across all fields, that has helped establish engineering mechanobiology as a discipline. He also co-directs the NIH CardioVascular Research Innovation in Surgery and Engineering Center and its T32 training program. He is Past Chair of the ASME Bioengineering Division, an elected Member-at-Large of the World Council of Biomechanics, and has served on the Board of Directors of the Society of Engineering Science, the steering committee of the U.S. Interagency Modeling and Analysis Group, and as chair of NIH study sections. He is a Fellow of ASME, AIMBE, the International Academy of Medical and Biological Engineers, and the National Academy of Inventors. His honors include the ASME Savio L.-Y. Woo Medal for Translational Biomechanics, the ASME Richard Skalak Award, an NIH Research Career Award for work on the mechanics of fibrosis, and the James B. Eads Award of the Academy of Science of St. Louis. Genin earned his Ph.D. in applied mechanics at Harvard under John Hutchinson and completed postdoctoral training at Cambridge and Brown.

# Floor Plans






**WEST CONVENTION CENTER FLOOR 1**




WEST CONVENTION CENTER FLOOR 2




EAST CONVENTION CENTER

# Schedule at a Glance



| SUNDAY NOVEMBER 8 | MONDAY NOVEMBER 9 | TUESDAY NOVEMBER 10 | WEDNESDAY NOVEMBER 11 | THURSDAY NOVEMBER 12 |
|---|---|---|---|---|
| Registration - Convention Center 1:00PM–5:00PM | Registration - Convention Center 7:00AM–6:00PM | Registration - Convention Center 7:00AM–6:00PM | Registration - Convention Center 7:00AM–6:00PM | Registration - Convention Center 7:00AM–6:00PM |
| Committee Meetings and Activities | Continental Breakfast 7:30AM–8:00AM | Continental Breakfast 7:30AM–8:00AM | Continental Breakfast 7:30AM–8:00AM | Continental Breakfast 7:30AM–8:00AM |
| ElevateMe Workshop 1:00PM–2:00PM | Plenary Track Speakers 8:00AM–8:45AM | Plenary Track Speakers 8:00AM–8:45AM | Plenary Track Speakers 8:00AM–8:45AM | Plenary Track Speakers 8:00AM–8:45AM |
| First-Timers Orientation 2:00PM–3:00PM | Technical Sessions 8:50AM–10:35AM | Technical Sessions 8:50AM–10:35AM | Special Panel Sessions 8:50AM–9:50AM | Technical Sessions 8:50AM–10:15AM |
| Undergrad Reception & Pitch Competition 4:30PM–6:00PM | Refreshment Break 10:35AM–11:10AM | Refreshment Break 10:35AM–11:10AM | Refreshment Break 9:50AM–10:10AM | Refreshment Break 10:15AM–10:30AM |
| Council of Chairs Meeting 5:00PM–6:00PM | Keynote Presentation Mattia Giustiniano 11:10AM–12:10PM | Keynote Panel Presentation Engineering in the Age of AI 11:10AM–12:10PM | Technical Sessions 10:10AM–11:55AM | Technical Sessions 10:30AM–12:00PM |
| | Exhibit Hall Open 12:00PM–7:00PM | Exhibit Hall Open 12:00PM–4:00PM | Exhibit Hall Open 12:00PM–4:30PM | Closing Keynote Lunch John Ustica 12:00PM–1:30PM |
| | Conference Lunch 12:15PM–1:15PM | Conference Lunch 12:15PM–1:15PM | Conference Lunch 12:00PM–1:00PM | Technical Sessions 1:35PM–3:00PM |
| | Technical Sessions 1:20PM–3:05PM | Rising Stars Showcase 1:15PM–2:15PM | Agency & Research Posters 12:00PM–2:00PM | Closing Reception 3:10PM–4:10PM |
| | Refreshment Break 3:05PM–3:25PM | Technical Sessions 2:15PM–4:00PM | Technical Sessions 2:00PM–3:45PM | |
| | Technical Sessions 3:25PM–5:10PM | Technical Sessions 4:00PM–5:30PM | Refreshment Break 3:45PM–4:05PM | |
| | Opening Reception & Undergraduate Expo 5:15PM–7:00PM | Committee Meetings and Activities 5:30PM–9:00PM | Technical Sessions 4:05PM–5:50PM | |
| | Committee Meetings and Activities 6:30PM–9:00PM | | Committee Meetings and Activities 5:30PM–9:00PM | |
| | Elevate Me Meet-up 7:10PM–8:30PM | | Women in Engineering Panel & Reception 6:00PM–7:00PM | |

# Committee Meetings



## IMECE 2026- VANCOUVER CONVENTION CENTRE

| DAY/DATE | NAME | TIME | ROOM | LOCATION |
|---|---|---|---|---|
| Saturday, November 7 | ASME TEC Council Meeting | 9:00AM–5:00PM | Room 212 | CC |
| Sunday, November 8 | Power Division Executive Committee Meeting - CLOSED | 8:00AM–4:30PM | Room 202 | CC |
| Sunday, November 8 | Board of Governors Meeting - Open Session | 9:00AM–12:00PM | Room 109/110 | CC |
| Sunday, November 8 | Old Guard Committee Meeting | 11:00AM–3:00PM | Room 119/120 | CC |
| Sunday, November 8 | ASME TEC Council Meeting - CLOSED | 11:00AM–5:00PM | Room 212 | CC |
| Sunday, November 8 | Board of Governors Meeting - Closed Session | 1:00PM–3:00PM | Room 109/110 | CC |
| Sunday, November 8 | ASME Business Meeting | 3:30PM–4:00PM | Room 109/110 | CC |
| Sunday, November 8 | Heat Transfer Division Executive Committee Closed Meeting | 4:00PM–6:00PM | Room 203 | CC |
| Sunday, November 8 | Elevator Pitch Competition and Student Networking Reception | 4:15PM–6:00PM | Ocean Foyer, Level 1 | CC |
| Sunday, November 8 | Old Guard Elevator Pitch Competition | 4:30PM–6:00PM | Room 119/120 | CC |
| Monday, November 9 | ASME Foundation Board & Philanthropy Committee Convening | 8:30AM–11:30AM | Room 218/219 | CC |
| Monday, November 9 | Committee of Past Presidents Meeting | 12:00PM–3:00PM | Room 224 | CC |
| Monday, November 9 | Applied Mechanics Division EC Meeting-CLOSED | 5:00PM–9:00PM | Room 217 | CC |
| Monday, November 9 | Rayleigh Lecture | 5:15PM–6:15PM | Room 109 | CC |
| Monday, November 9 | Power Symposia Track Organizing Committee Meeting | 5:30PM–6:30PM | Room 119/120 | CC |
| Monday, November 9 | Biomedical & Biotechnology Engineering Track Organizer Meeting | 6:00PM–7:00PM | Room 118 | CC |
| Monday, November 9 | Heat Transfer Division Executive Committee Open Meeting | 6:30PM–8:30PM | Room 121 | CC |
| Monday, November 9 | Mechanical Engineering Department Heads Executive Committee (MEDHEC) Meeting | 6:30PM–7:30PM | Room 220 | CC |
| Monday, November 9 | Advanced Energy System Division (AESD) Renewable Energy and Energy Conversion (REEC) Technical Committee Meeting | 7:00PM–8:00PM | Room 202 | CC |
| Monday, November 9 | Mechanical Engineering Department Heads Executive Committee (MEDHEC) Reception | 7:30PM–8:30PM | Room 220 | CC |

## IMECE 2026- VANCOUVER CONVENTION CENTRE

| DAY/DATE | NAME | TIME | ROOM | LOCATION |
|---|---|---|---|---|
| Tuesday, November 10 | Manufacturing Engineering Division Executive Committee Meeting | 5:30PM–7:00PM | Room 203 | CC |
| Tuesday, November 10 | Public Affairs & Outreach Sector Meeting | 5:30PM–8:00PM | Room 217 | CC |
| Tuesday, November 10 | Nondestructive Evaluation, Diagnosis, and Prognosis Division Executive Committee | 5:30PM–7:00PM | Room 204 | CC |
| Tuesday, November 10 | Fluids Engineering Division Town Hall | 5:30PM–6:30PM | Room 110 | CC |
| Tuesday, November 10 | Dynamics and Control of Systems and Structures Meeting | 5:30PM–6:30PM | Room 205 | CC |
| Tuesday, November 10 | Warner T. Koiter Medal Lecture | 5:30PM–6:30PM | Room 109 | CC |
| Tuesday, November 10 | Advanced Energy Systems Division Lecture & Reception *(Ticketed event)* | 5:30PM–7:30PM | Room 211 | CC |
| Tuesday, November 10 | Heat Transfer Technical Committee Event | 5:30PM–7:30PM | Room 224 | CC |
| Tuesday, November 10 | Materials Division TC and EC Meeting | 5:30PM–8:30PM | Room 118 | CC |
| Tuesday, November 10 | Noise Control & Acoustics Division Executive Committee Meeting | 5:45PM–6:45PM | Room 116 | CC |
| Tuesday, November 10 | Power Symposium Lecture & Awards Reception *(Ticketed event)* | 6:00PM–8:00PM | Room 220 | CC |
| Tuesday, November 10 | ASME J. of Medical Diagnostics (JESMDT) Editorial Board Meeting | 6:00PM–7:00PM | Room 202 | CC |
| Tuesday, November 10 | Tribology Division Reception | 6:00PM–8:00PM | Room 218/219 | CC |
| Tuesday, November 10 | Fluids Engineering Division EFD TC | 6:30PM–7:30PM | Room 111/112 | CC |
| Tuesday, November 10 | Fluids Division Fluid Mechanics Technical Committee | 6:30PM–7:30PM | Room 110 | CC |
| Tuesday, November 10 | Advanced Energy Systems Division Advanced Energy Systems Analysis Technical Comm Meeting | 7:00PM–8:00PM | Room 122 | CC |
| Tuesday, November 10 | Advanced Energy Systems Division Electrochemical Energy Conversion & Storage Technical Comm Meeting | 7:00PM–8:00PM | Room 121 | CC |
| Tuesday, November 10 | Fluids Engineering Division CFD Technical Committee Meeting | 7:30PM–8:30PM | Room 111/112 | CC |

## IMECE 2026- VANCOUVER CONVENTION CENTRE

| DAY/DATE | NAME | TIME | ROOM | LOCATION |
|---|---|---|---|---|
| Tuesday, November 10 | Advanced Energy Systems Division Renewable Energy & Energy Conversion Technical Comm Meeting | 7:30PM–8:30PM | Room 119/120 | CC |
| Tuesday, November 10 | Fluids Engineering Division BioMed Technical Committee Meeting | 8:00PM–9:00PM | Room 110 | CC |
| Tuesday, November 10 | Advanced Energy Systems Division Combined Technical Committee Meeting | 8:00PM–9:00PM | Room 121 | CC |
| Wednesday, November 11 | Materials Division Awards Session and Reception | 2:00PM–5:00PM | Room 224 | CC |
| Wednesday, November 11 | Fluids Engineering Division Multiphase Flow Technical Committee | 5:00PM–6:00PM | Room 220 | CC |
| Wednesday, November 11 | Per Bruel Gold Medal Presentation | 5:00PM–6:00PM | Room 215/216 | CC |
| Wednesday, November 11 | Steam Turbines, Generators and Auxiliaries (STG&A) Committee Meeting | 5:30PM–6:30PM | Room 217 | CC |
| Wednesday, November 11 | Applied Mechanics Division Technical Committee Meeting Mechanics of Soft Materials | 5:30PM–6:30PM | Room 119/120 | CC |
| Wednesday, November 11 | Applied Mechanics Division CONCAM Committee Meeting | 5:50PM–6:50PM | Room 209 | CC |
| Wednesday, November 11 | Instabilities in Solids and Structures Technical Committee Meeting | 5:50PM–6:50PM | Room 210 | CC |
| Wednesday, November 11 | Fluids Engineering Division Fluids Application and Systems Technical Committee Meeting | 6:00PM–7:00PM | Room 220 | CC |
| Wednesday, November 11 | Women in Engineering & Early Career Panel/ Roundtable | 6:00PM–7:30PM | Room 211 | CC |
| Wednesday, November 11 | Microelectromechanical Engineering Division (MEMS) Meeting | 6:30PM–8:30PM | Room 221/222 | CC |
| Wednesday, November 11 | Fluids Engineering Division Reception | 7:00PM–9:00PM | Room 220 | CC |
| Wednesday, November 11 | Advanced Energy Systems Division Executive Committee Meeting | 7:00PM–8:00PM | Room 116 | CC |
| Thursday, November 12 | Fluids Engineering Division Executive Committee with Technical Committee Chairs Closing Meeting | 3:00PM–4:00PM | Room 203 | CC |
| Thursday, November 12 | Fluids Engineering Division Executive Committee Closing Meeting | 4:30PM–5:30PM | Room 203 | CC |

## IMECE 2026 PINNACLE HOTEL (HOST HOTEL)

| DAY/DATE | NAME | TIME | ROOM | LOCATION |
|---|---|---|---|---|
| Saturday, November 7 | ASME TCPC IMECE 2026 Meeting | 8:30AM–12:00PM | Harbourfront Ballroom I, 2nd Fl. | Hotel |
| Saturday, November 7 | ASME Joint TCPC/BOE IMECE 2026 Meeting | 12:30PM–5:00PM | Harbourfront Ballroom I, 2nd Fl. | Hotel |
| Saturday, November 7 | ET Meeting - CLOSED | 4:00PM–5:30PM | Salon C, Lower Level | Hotel |
| Sunday, November 8 | Open Office Hours for Journal Editors & Associate Editors | 10:00AM–12:00PM | Salon D, Lower Level | Hotel |
| Tuesday, November 10 | Applied Mechanics Division Awards Dinner *(Ticketed event)* | 7:00PM–9:00PM | Harbourfront Ballroom, 2nd Fl. | Hotel |
| Thursday, November 12 | IMECE 2026 Closing Reception | 3:10PM–4:10PM | Cordova Ballroom, Level A | Hotel |



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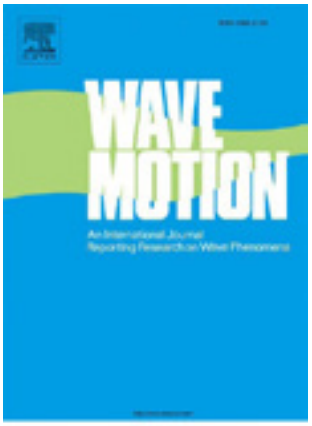
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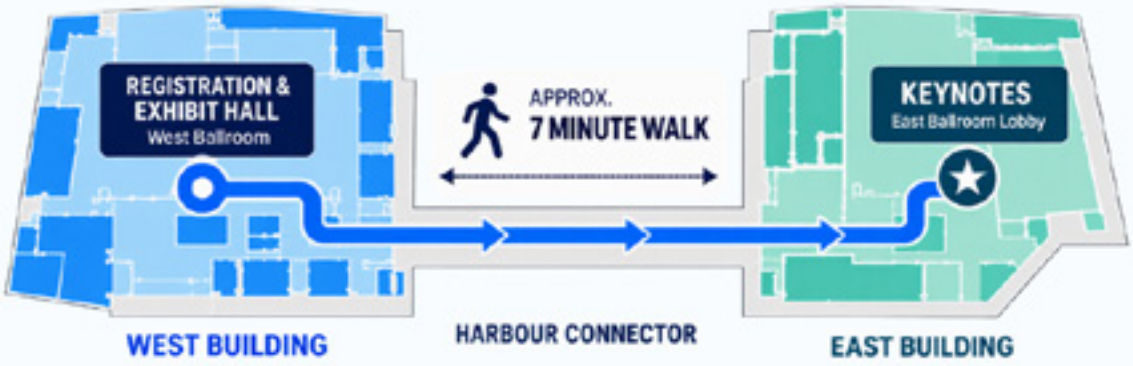
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# GET TO THE KEYNOTES

From the **West Ballroom** to the **East Ballroom Lobby**




## FOLLOW THESE STEPS

### 1 START



From the **West Ballroom** head towards the **Harbour Connector**.

### 2 CONNECT



Follow signs down the **escalators to the Harbour Connector** by the Burrard Foyer entrance.

### 3 ARRIVE



**Exite the Connector** up into the East Ballroom Lobby.

i Scan the QR code for the venue map and additional wayfinding information.



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