

2026 SES ANNUAL MEETING



**SOCIETY OF
ENGINEERING SCIENCE**



**OCTOBER 11-14
2026**

FINAL PROGRAM

Purdue University | School of Mechanical Engineering
West Lafayette, Indiana

Welcome to Purdue University and the 2026 Society of Engineering Science Annual Technical Meeting

On behalf of the School of Mechanical Engineering at Purdue University, it is our great pleasure to welcome you to the 2026 Society of Engineering Science Annual Technical Meeting. We are honored to host this outstanding community of researchers, educators, students, and industry leaders whose work continues to advance the frontiers of engineering science.

This year's meeting is especially meaningful because the Society of Engineering Science traces its origins to Purdue University. More than six decades ago, Professor A.C. Eringen and his colleagues established a society dedicated to advancing fundamental understanding across engineering disciplines and fostering a vibrant community of scholars. It is therefore a special privilege to welcome SES back to Purdue, where this journey began.

The School of Mechanical Engineering has a long tradition of leadership in engineering education, research, and innovation. Since our beginnings in 1882, Purdue mechanical engineers have helped shape technologies, industries, and scientific disciplines that influence society around the world. Today, as the largest and one of the most highly regarded mechanical engineering programs in the nation, we remain committed to pursuing excellence, fostering collaboration, and preparing future generations of engineers and scholars to address the challenges and opportunities of a rapidly changing world.

The SES community embodies many of these same values. For generations, its members have advanced our understanding of the physical principles that govern natural and engineered systems while creating new knowledge that enables innovation across a broad range of applications. The integration of theory, experimentation, computation, and data-driven discovery continues to open new frontiers and deepens our ability to address problems of societal importance.

Equally important, SES has always been a community that invests in people. As a university, whose mission is to change the world for the better through education, we are especially pleased to welcome the many students and early-career researchers attending this meeting. We hope that the discussions, collaborations, and connections formed here will inspire the next generation of leaders in engineering science.

We encourage you to take time to enjoy Purdue's campus and the vibrant community of West Lafayette during your visit. We are delighted to host you and look forward to an exciting week of technical exchange, professional growth, and renewed friendships.

Welcome to Purdue, and best wishes for a productive and memorable 2026 SES Annual Technical Meeting.

Sincerely,

Dr. Eckhard A. Groll

William E. and Florence E. Perry Head of Mechanical Engineering
Reilly Distinguished Professor of Mechanical Engineering

Dr. Thomas Siegmund

Professor of Mechanical Engineering
Conference Co-Chair

Dr. Kejie Zhao

Professor of Mechanical Engineering
Conference Co-Chair



MESSAGE FROM SES PRESIDENT

Dear colleagues, friends, and members of the SES Community,

Welcome to the 2026 Society of Engineering Science Annual Technical Meeting at Purdue University. I'm delighted that we are gathering in West Lafayette to share our work, exchange ideas, and strengthen the connections that make SES a distinctive interdisciplinary community.

Engineering science thrives at the boundaries between disciplines. Our meeting brings together different ways of asking questions and understanding complex systems. I hope the talks and conversations this week spark new collaborations, challenge familiar assumptions, and give each of us fresh ideas to carry back to our research, teaching, and practice.

This year's program features three distinguished award symposia: the Prager Medal, A.C. Eringen Medal, and Yonggang Huang Engineering Science Medal symposia. These sessions recognize exceptional contributions to our field and offer an opportunity to engage with the ideas shaping engineering science. The 2026 medalists are Samuel Forest, Vijay Kumar, and Dimitris Lagoudas, respectively.

A strong Society creates opportunities for its members to learn from and support one another. In 2026, SES launched its Early-Career Faculty Mentoring Program, connecting early-career faculty with experienced members of our community. The first cohort is now underway. In collaboration with the local organizers, SES will also host an in-person group mentoring activity at the annual meeting to complement the year-long mentoring program. This year, Shelly Zhang, Kejie Zhao, and I are organizing the event Young Faculty Assembly on Sunday, October 11, from 4:30 to 6:00 p.m. We hope it will offer young faculty a welcoming space to share experiences and build connections.

SES has also established the SES Student and Postdoctoral Award to recognize graduate students and postdoctoral fellows in engineering science for exceptional academic and scholarly achievements. For this inaugural award, 16 finalists have been invited to present their research in an award symposium at the Meeting. Up to five awardees will be selected based on the quality of their presentations. I encourage you to attend the finalists' presentations on Monday and join in celebrating the next generation of engineering science researchers.

I would like to extend my sincere thanks to Thomas Siegmund and Kejie Zhao at Purdue University for organizing this year's meeting. I am also grateful to the volunteers, session organizers, speakers, sponsors, and everyone whose efforts make this gathering possible.

Thank you for being part of SES. I wish you a stimulating, productive, and enjoyable meeting.

Yong Zhu

President, Society of Engineering Science

2026 CONFERENCE SPONSORS

We gratefully acknowledge the support by the National Science Foundation through Award 2619256.

- Meet NSF Program Directors in the Mechanics of Advanced Materials Systems (MAMS) program
- Hear about NSF programs: **Tuesday, Oct. 13, 4:30 PM, STEW 320**



Visit our generous sponsors in STEW 306 throughout the conference!



School of Mechanical Engineering



Journal of Applied Physics
APL Engineering Physics



PRACTICAL **GUIDE**

CONFERENCE REGISTRATION

Sunday, October 11:	PMU Main Lounge	2:30 pm - 7:00 pm
Monday, October 12:	Stewart 109BC	7am - 4:00 pm
Tuesday, October 13:	Stewart 109BC	7am - 4:00 pm
Wednesday, October 14:	Stewart 109BC	7am - noon

HOSPITALITY ROOM

Conference Hospitality is located in Stewart Center, Room 302/306 and RAWLS East Foyer

Monday 10:00 a.m. to 4:00 p.m.

Tuesday 10:00 a.m. to 4:00 p.m.

Wednesday 10:00 a.m. to 1:00 p.m.

INTERNET ACCESS

Wireless internet is available to all attendees via the ATT WIFI hotspot. Please choose ATT Wifi as your internet connection. When you open a browser, you will be automatically connected. You will need to provide your email address and accept terms & conditions. Purdue University also supports Eduroam.

CONFERENCE MOBILE APP

The conference uses the Conference4me Mobile Application. Attendees may use the QR code to download the app via Google Play or Apple App Store. Attendees can customize their agenda, view plenary speaker bios, view technical session abstracts, and network with other conference attendees.



SMOKING POLICIES ON CAMPUS

Smoking is prohibited on the West Lafayette Campus, except in designated smoking areas. All smoking material shall be extinguished and disposed of in an appropriate receptacle at the perimeter of the campus. Designated smoking areas are published in maps around the Purdue campus. The closest smoking area to Stewart Center is located across Mitch Daniels Blvd, north of the Agricultural Administration Building.

TEMPERATURES INSIDE & OUTSIDE DURING THE CONFERENCES

Outside temperatures in Indiana are usually between 58-72 degrees. Room temperatures in technical session rooms are often cool for our International visitors; come prepared!

VOLUNTEERS

Our conference volunteers can be recognized by a their yellow lanyard. They can help with questions and directions.

PARKING ON CAMPUS

There are a few options with parking at Purdue. The first Grant Street Parking Garage is directly across from the Purdue Memorial Union and Union Club Hotel. There is no prepay option for this garage. You will take a ticket into the garage and pay in the garage lobby before leaving by credit card. There are also pay stations at the exits of the garage.

A second option would be to pre-pay for an A-permit online. There are scattered parking flat lots on campus labeled for A-permit parking. Lots are designated as A, B or C. You will need to park in the A designated lot and pull your vehicle into the parking spot so your license plate is visible. Purdue Parking will check license plates and if it is not visible you will receive a ticket. For detailed information to purchase visit https://purdue.t2hosted.com/cmn/auth_ext.aspx.

Do not park in marked parking spaces or you will be ticketed. We are not able to get your ticket dismissed. Attendees with Government issued plates are able to park in any A, B, or C parking spaces.

TECHNICAL AV INFORMATION

Note for Presenters: Authors must present from their own laptop. An HDMI cable will be provided for connecting to the in-room AV system, and presenters must come equipped with appropriate connectors.

911 EMERGENCY:
POLICE/FIRE/MEDICAL



FOR MORE
INFORMATION:
purdue.ws/purdue-emergency-status

NON-EMERGENCY

Purdue University Police Department (PUPD)	765-494-8221
Purdue University Fire Department (PUFD)	765-494-6919
Office of Emergency Preparedness (OEP)	765-494-0446
Environmental Health & Safety (EHS)	765-494-6371
Disaster Recovery	765-494-2000
Work Request Center	765-494-9999



SAMUEL FOREST

Centre des Matériaux; MINES Paristech; CNRS UMR 7633

Monday, Oct 12, 8:00 AM, Loeb Playhouse, STEW

For making the mechanics of generalized continua amenable to engineering applications involving size and microstructure effects in the plasticity and failure of crystalline and composite materials and structures.



Abstract: A. Cemal Eringen, founder of the Society of Engineering Science, left us his wonderful and fertile theory of micromorphic media as a legacy, which he invented in 1964. It took time for experimental and numerical methods to develop sufficiently and take full advantage of this detailed modeling of materials including their microstructure. The micromorphic approach is finally enjoying undeniable success in materials mechanics, particularly for plasticity and damage. Taking microstructure into account in the behavior of materials begins with the identification of a triad of directors attached to each material point. Essential for describing the anisotropic behavior, the directors can be attached to the crystallographic directions of a single crystal or to the direction of fibers in a composite material. Eringen's microdeformation then describes the rotation and distortion of the triad of directors during deformation. I have proposed extensions of this approach to other aspects of the microstructure of engineering materials. I will begin with the microfoam model dedicated to the plasticity and damage of nickel foams used in cell phone and computer batteries. Microdeformation then describes the transformation of the cells in these materials, observed using X-ray tomography techniques. The model introduces a characteristic length associated with cell size that controls plastic deformation and crack propagation in cellular media. The microcurl model limits Eringen's microdeformation gradient to the curl of plastic deformation in single crystals.

In that way, it introduces the Nye/Kröner dislocation density tensor into the continuum model of crystal plasticity. It is used to predict the effects of grain size in polycrystals, lamella thickness in martensitic microstructures, and plastic deformation localization phenomena such as slip bands and shear bands in metals and alloys. Finally, we question the maturity of these models for industrial applications such as the plasticity of small-scale structures and the prediction of localization and failure in mechanical and civil engineering components. We show the implementation of a scalar variable gradient model to limit the number of degrees of freedom in an industrial code for large deformations. The approach is generic and virtually transparent to the user, who must add a characteristic length to the parameter set of his/her preferred constitutive model in order to regularize localization problems. However, there are still some obstacles to overcome for the systematic and robust use of these models, particularly when it comes to determining the ultimate localization of deformation and damage.

DIMITRIS C. LAGOUDAS

Robert C. "Bud" Hagner Chair of Engineering, University Distinguished Professor, Departments of Aerospace Engineering and Materials Science and Engineering, Texas A&M University



Monday, Oct 12, 2:00 PM, Loeb Playhouse, STEW

For theoretical and computational developments in the field of smart and multifunctional materials, especially shape memory alloys (SMAs), with significant contributions to the design, modeling, and implementation of SMAs as actuators in morphing adaptive structures

Abstract: Classical continuum mechanics describes material behavior through the conservation principles of mass, energy, momentum, and charge, subject to the constraints of thermodynamics. These conservation laws can be interpreted through the invariance of the action integral under transformations in the deformed and reference configurations, as established by Noether's theorem. Within this framework, internal state variables provide a powerful mechanism for representing irreversible processes and microstructural evolution, including plasticity, damage, and phase transformations. Shape Memory Alloys (SMAs) constitute an important class of multifunctional materials whose behavior is governed by reversible martensitic phase transformations. In continuum descriptions of SMAs, internal state variables characterize phase evolution and the associated thermomechanical coupling, enabling the prediction of large recoverable deformations and adaptive responses. This presentation examines modeling approaches for SMAs, beginning with thermodynamics-based constitutive formulations and extending to hybrid frameworks that combine physics-based descriptions with emerging data-driven methodologies. These approaches enhance predictive capability while preserving thermodynamic consistency and physical reliability. These modeling frameworks provide the foundation for the design of SMA-enabled components and adaptive systems, including aerospace structures that exploit shape-morphing and actuation capabilities. Beyond individual components, the incorporation of additional field couplings, such as magnetic interactions, further expands the multifunctional capabilities of these materials. At larger length scales, the combination of advanced material behavior with structural architecture gives rise to architected materials and metastructures whose functionality emerges from both their constituent materials and geometric design. The integration of SMAs within such systems creates multifunctional metastructures capable of achieving levels of adaptability and performance beyond those attainable through either advanced materials or structural architecture alone. Finally, current challenges and future opportunities are addressed, including additive manufacturing of SMA-based systems, thermodynamically constrained data-driven methods, and multiscale modeling frameworks capable of capturing complex microstructural evolution under nonuniform loading conditions. These advances are expected to play a key role in the development of next-generation multifunctional materials and adaptive engineering systems.



2026 A.C. ERINGEN MEDALIST

VIJAY KUMAR

*Professor and Nemirovsky Family Dean, School of Engineering and Applied Science,
University of Pennsylvania*



Tuesday Oct 13, 8:00 AM, Loeb Playhouse, STEW

For pioneering contributions to robotics, including foundational advances in cooperative manipulation, multi-robot formation control, autonomous swarms, and agile aerial vehicles, translating rigorous theory into transformative engineering applications in autonomy, field robotics, and industry-shaping innovations.

Abstract: Robotics is undergoing a fundamental transformation: from machines that execute programmed behaviors to autonomous systems that perceive, reason, learn, collaborate, and act in the physical world. This evolution toward Physical AI requires a new integration of mechanics, control, computation, and artificial intelligence. In this talk, I will discuss advances in autonomy, multi-robot collaboration, and aerial robotics that have enabled robots to operate in increasingly complex and uncertain environments.

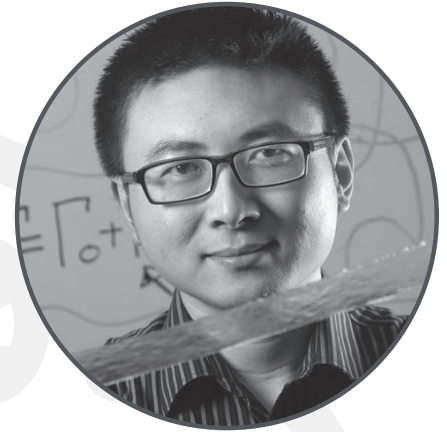
I will then explore how foundation models, including large language models and vision-language models, are creating new opportunities for robots to understand context, communicate with humans, and perform open-ended tasks. Unlike digital AI systems, robots must make decisions that have physical consequences. This creates new challenges in grounding, reliability, and safety. I will discuss the scientific foundations needed to build trustworthy embodied intelligence: systems that not only know what they can do but understand what they should do.

XUANHE ZHAO

*Professor, George N. Hatsopoulos (1949) Faculty Fellow,
Massachusetts Institute of Technology*

Tuesday, Oct 13, 2:00 - 2:40 PM, STEW 202

For pioneering advances in soft materials and interfaces that bridge mechanics, electronics, and biology.



Abstract: Whereas human tissues and organs are mostly soft, wet, and bioactive, machines are commonly hard, dry, and abiotic. Merging humans and machines is of critical importance in addressing grand societal challenges in AI, health, environment, security, education, and happiness in life. However, merging humans and machines is extremely challenging due to their fundamentally contradictory properties. At the MIT Zhao Lab, we invent, study, and translate soft materials and systems to form long-term, robust, non-fibrotic, and high-bandwidth interfaces between humans and machines.

In this talk, I will discuss the fundamental mechanics of soft materials for merging humans and machines. I will conclude the talk with a vision for the future convergence of humans and machines—especially between humans and AI.



2026 EMMY NOETHER MEDALIST

HALEH ARDEBILI

*Kamel Salama Endowed Professor of Mechanical & Aerospace Engineering,
Assistant Vice President of Entrepreneurship and Startup Ecosystem,
Mechanical Engineering Department, University of Houston*



Tuesday, Oct 13, 2:40 - 3:20 PM, STEW 202

For pioneering contributions to the development of solid electrolytes for stretchable batteries and the promotion of science to the general public.

Abstract: Bendable and stretchable solid polymer electrolyte (SPE) batteries have emerged as promising energy solutions for integration with wearables, smart textiles, biomedical, space and military applications. Replacing conventional organic liquid with polyethylene oxide (PEO) based electrolytes allows for stretchable configurations such as spiral and fabric-based structures. Here, we present two different types of fabrics for the reinforcement of SPEs: nonwoven polyethylene terephthalate fabric and woven nylon-spandex fabric. Using woven fabric reinforcement, we improved the mechanical strength of the SPE by an order of magnitude and almost doubling the elastic strain recovery. By engineering a patched/patterned fabric polymer electrolyte, we achieved a high elastic strain recovery. Nonwoven fabric reinforcement of polymer electrolyte also significantly improved the mechanical strength of the polymer.

Furthermore, predicting the end of life of flexible and stretchable lithium-ion batteries is critical for ensuring reliability and safety, particularly under mechanical and environmental stressors. Artificial intelligence (AI) was developed to enable State of Health (SoH) estimation and Remaining Useful Life (RUL) prediction using advanced deep learning architectures. Hybrid frameworks combining temporal and spatial learning, along with interpretable features such as health indices and attention mechanisms, enable robust learning of degradation behavior, supporting improved performance and safety of energy storage systems.

RENEE ZHAO

Assistant Professor of Mechanical Engineering and, By Courtesy, of Bioengineering and of Materials Science and Engineering, Stanford University

Tuesday, Oct 13, 4:30 - 5:10 PM, STEW 202

For her outstanding contributions in studying fundamental mechanics and science of soft active materials and instability of rings and their innovative applications to origami robots, active metamaterials, deployable structures, and biomedical devices.



Abstract: This talk traces our journey from instability-driven origami robots to the development of a the milli-spinner thrombectomy for clot treatment. We began by exploring millimeter-scale origami robots for biomedical applications. Existing designs typically separate locomotion from functional modules and rarely operate effectively across multiple environments. To overcome this, we developed a magnetically actuated amphibious origami millirobot based on a triangulated hollow cylinder. Its geometry enables rolling and flipping on solid surfaces, while controlled spinning generates propulsion in water. Its folding-unfolding instability serves as an integrated pumping mechanism for targeted drug delivery, which demonstrates how geometry alone can unify mobility and function. During underwater spinning experiments, we observed strong localized suction and confined vortical flows near boundaries. This fluid-structure interaction inspired a new concept: using spinning-induced flow fields to mechanically interact with soft biological materials.

This insight led to the magnetic milli-spinner thrombectomy platform for treating clot-induced vascular occlusions such as stroke. Unlike conventional devices that rely on extraction of intact clots, the milli-spinner adopts a mechanics-mediated approach. Through controlled spinning, it locally remodels and debulks the clot by harnessing clot physics and confined shear, shrinking the obstruction to 95% of volume reduction before removal. This remodeling-dominated paradigm aims to reduce fragmentation, minimize vessel injury, and improve first-pass reperfusion. From geometric instability to clot mechanics, this journey illustrates how fundamental mechanics can evolve into transformative, life-saving technologies.



SHELLEY ZHANG

*Associate Professor, David C. Crawford Faculty Scholar;
Office of Risk Management & Insurance Research (ORMIR) Faculty Scholar,
University of Illinois*

Tuesday, Oct 13, 5:10 - 5:50 PM, STEW 202

For exceptional contributions to integrating topology optimization, mechanics, and fabrication strategies to design novel materials and structures with extreme nonlinearity and superior programmability, enabling advances in soft robotics, biomedical devices, thermal management, and resilient infrastructure.



Abstract: Multifunctional and reprogrammable materials and structures hold great potential for various applications. The rational design, fabrication, and validation of these systems play important roles in enabling functional devices. Here, we develop multi-physics topology optimization approaches to design stimuli-responsive materials, including magneto-active and temperature-active materials, that achieve precisely tunable mechanical behaviors and complex switchable shape morphing, controlled by magnetic fields and temperature fields, respectively.

The obtained systems exhibit one response under one stimulus and switch to a distinct response by applying another stimulus. To bridge the gap between design and fabrication, we introduce advanced path generation methods and develop direct ink writing (DIW) techniques to fabricate a suite of magnetic and thermal metamaterials and experimentally validate their programmed behaviors. The excellent agreement among target, simulation, and experiment demonstrates that the proposed optimization-driven framework, when integrated with hybrid manufacturing techniques, has the potential to systematically design, inform, and create innovative multi-functional materials and structures.

LIPING LIU

Professor, Rutgers Schools of Engineering, Rutgers University

Abstract: We develop a variational framework for the optimal design of electromagnetic coils to generate an arbitrarily prescribed magnetic field in a target domain. An objective functional is proposed to balance the accuracy of the magnetic field with the material cost of the coils. Using calculus of variations and shape sensitivity analysis, we derive the first-order optimality conditions, revealing a nonlocal free-boundary structure intrinsic to the design problem. To obtain a well-posed and computationally tractable formulation, we develop a density-field formulation that separates the current density from the coil winding direction. For fixed winding directions, the resulting optimization problem is convex and well-posed. Under mild analyticity and continuation-to-infinity assumptions on the winding direction field, we establish that the optimal current density exhibits a bang--bang structure, taking only extreme values corresponding to the presence or absence of conducting material. This establishes the theoretical foundation for the proposed numerical schemes. As an illustrative application of this general framework, we focus on axisymmetric circular coils. Based on an efficient gradient descent algorithm, numerical experiments for axisymmetric circular coils reveal nontrivial optimal coil shapes that significantly outperform conventional designs.



NICHOLAS FANG

*Chair Professor of Photonics Innovation, Mechanical Engineering,
The University of Hong Kong*



INDUSTRY PANEL

STEW 202, SUNDAY, 3:30PM - 5:00PM

Moderators:

Pablo Zavatteri	Jerry M. and Lynda T. Engelhardt Professor in Civil Engineering, Purdue University
Nilesh D. Mankame	Global Research & Development, General Motors

Panelists:

Akhil Vijay	Senior Applications Engineer at COMSOL.
David Gross	Vice President of MED Institute, a Cook Group company.
Louis G. Hector, Jr.	Senior Technical Fellow, General Motors.
Luke Wellington	Associate Vice President, Eli Lilly and Company.
Paul Gloeckner	Director of Applied Mechanics Laboratories, Cummins.
Somesh Khandelwal	Founder and CEO of MeshOS AI.

YOUNG FACULTY ASSEMBLY

SUNDAY, 4:30PM - 6:00PM

Purdue Memorial Union: Anniversary Drawing Room

Moderators:

Shelly Zhang	University of Illinois at Urbana Champaign
Kejie Zhao	Purdue University
Yong Zhu	North Carolina State University

Schedule:

4:30–4:35 PM	Welcome and COMSOL remarks
4:35–5:00 PM	Opening plenary by Wendy Crone
5:00–5:50 PM	Round-table discussions
5:50–6:00 PM	Brief report-out and closing
6:00–7:00 PM	(Optional) Reception
7:00–9:00 PM	(Optional) Lightening talks



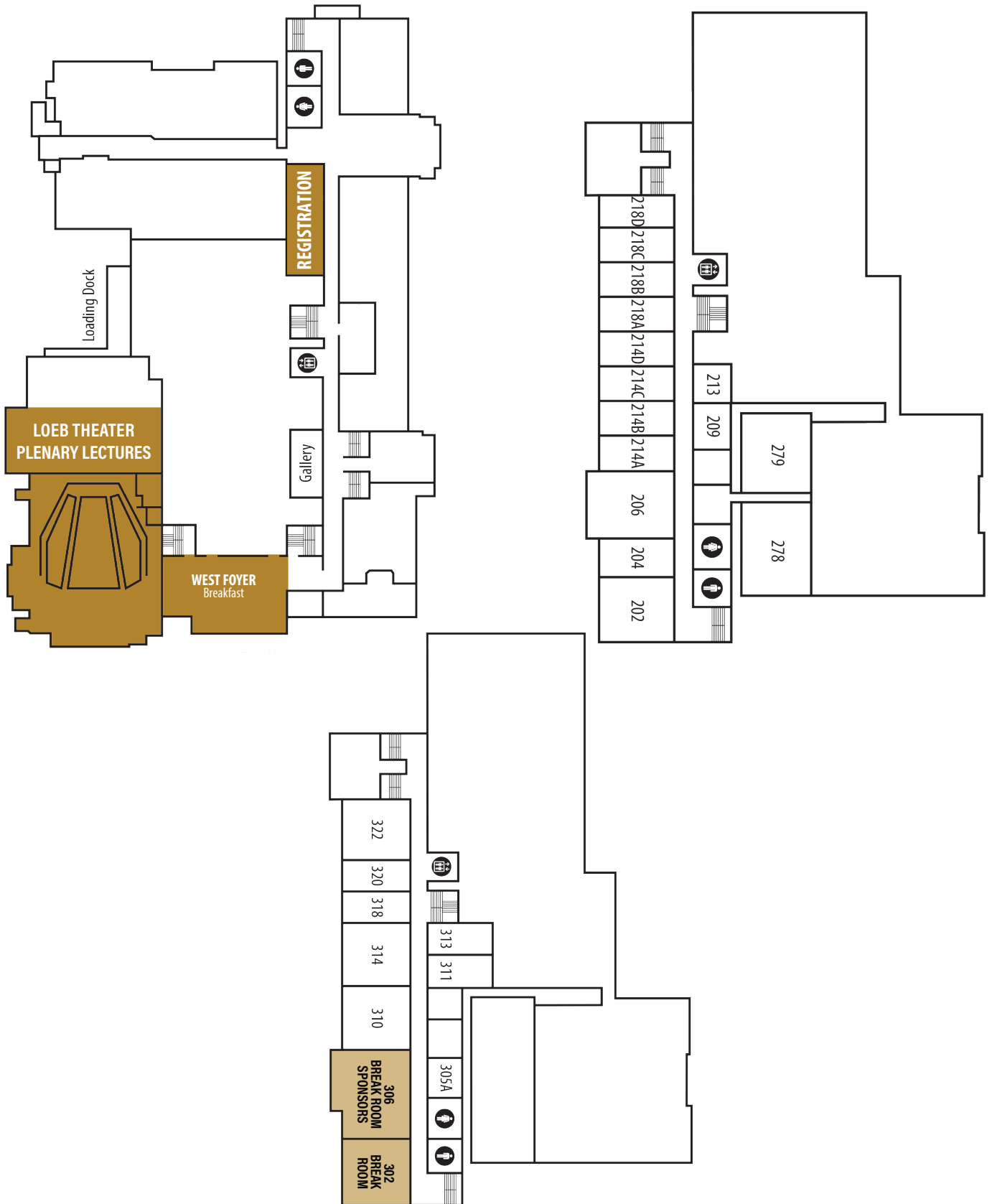
2026 SES STUDENT AND POSTDOCTORAL AWARD

MS 1.5, STEW 204, 9:15 AM - 5:30 PM, Monday, Oct. 12

For the inaugural SES Student and Postdoctoral Award (2026), 16 finalists were invited to present their research in an oral session at the annual SES Meeting in October. No more than five awardees will be selected based on the quality of their presentations. The oral session is open to all the conference attendees.

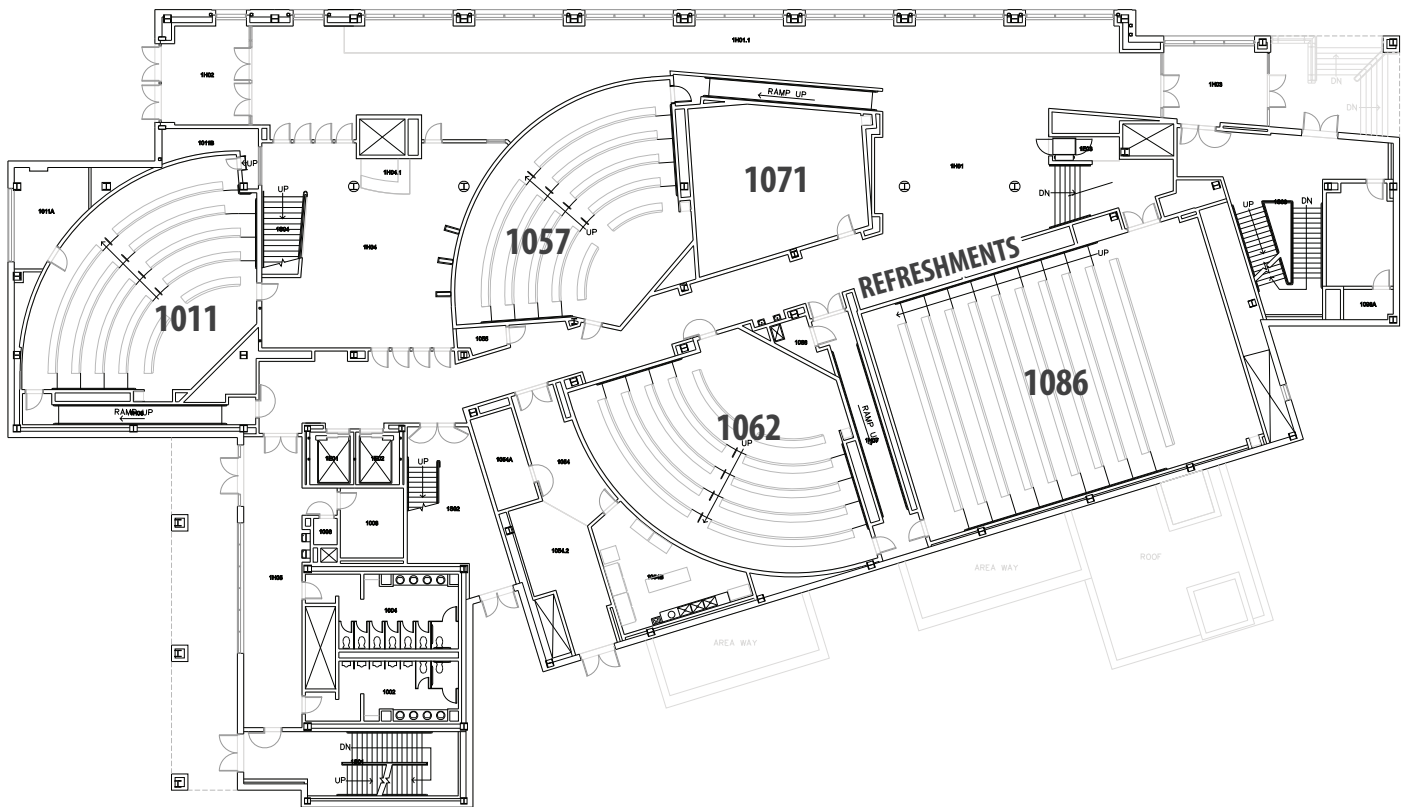
TaeHong Kim	Purdue University
Yue Wang	University of Houston
Amirreza Tarafdar	Syracuse University
Yijie Cheng	Michigan State University
Andrew Chen	Massachusetts Institute of Technology
Luc Capaldi	University of Pennsylvania
Farhad Kamarei	University of Illinois Urbana-Champaign
Fangjie Qi	North Carolina State University
Ohnyoung Hur	Virginia Tech
Qiong Wang	Northwestern University
Shupeng Li	Northwestern University
Chenghai Li	Harvard University
Taekyoung Kim	Northwestern University
Jianyu Zhou	North Carolina State University
Abhishek Gupta	Brown University
Sage Fulco	Massachusetts Institute of Technology

STEWART CENTER MAPS

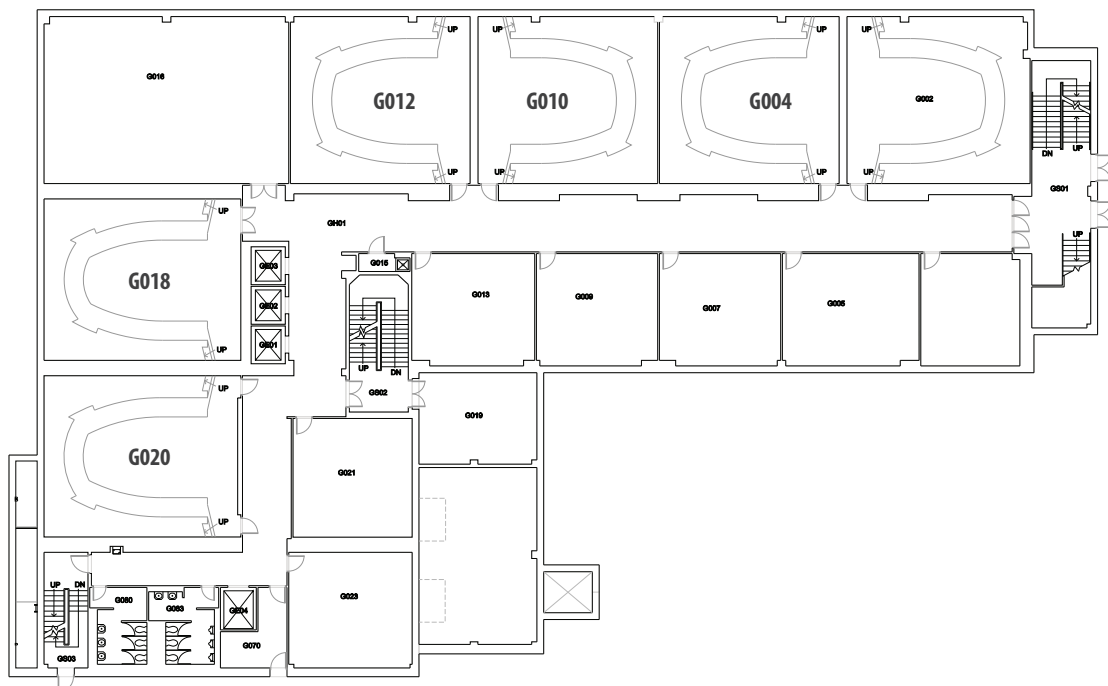


RAWLS AND KRANNERT MAPS

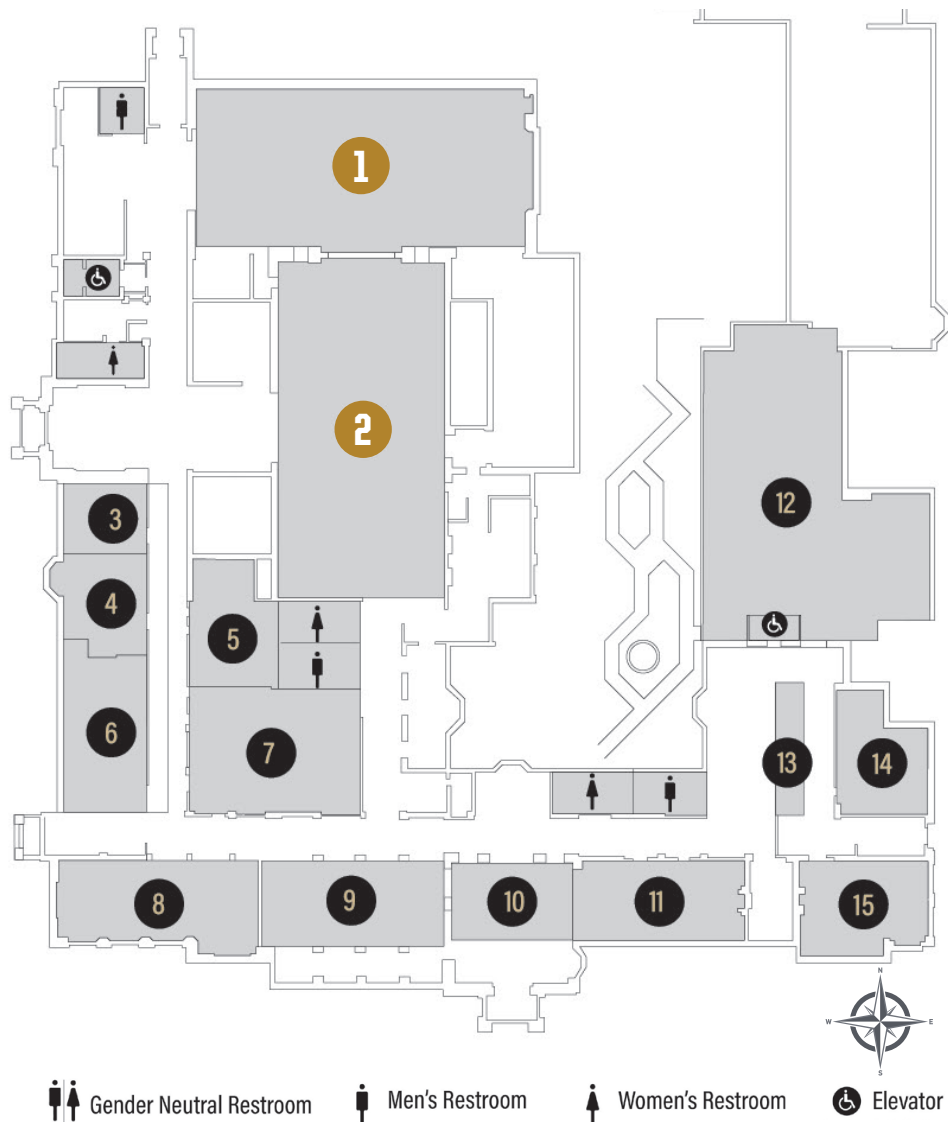
RAWLS HALL



KRANNERT



PURDUE MEMORIAL UNION FIRST FLOOR



EVENT VENUES

- 1 North Ballroom**
- 2 South Ballroom**
 - Sunday Reception
 - Monday Reception & Poster Show
 - Tuesday Banquet
- 8 West Main Lounge**
- 9 East Main Lounge**
 - Sunday Registration
- 10 Great Hall (Info Desk)**
- 11 118 Lounge**
- 12 Union Club Hotel Lobby**

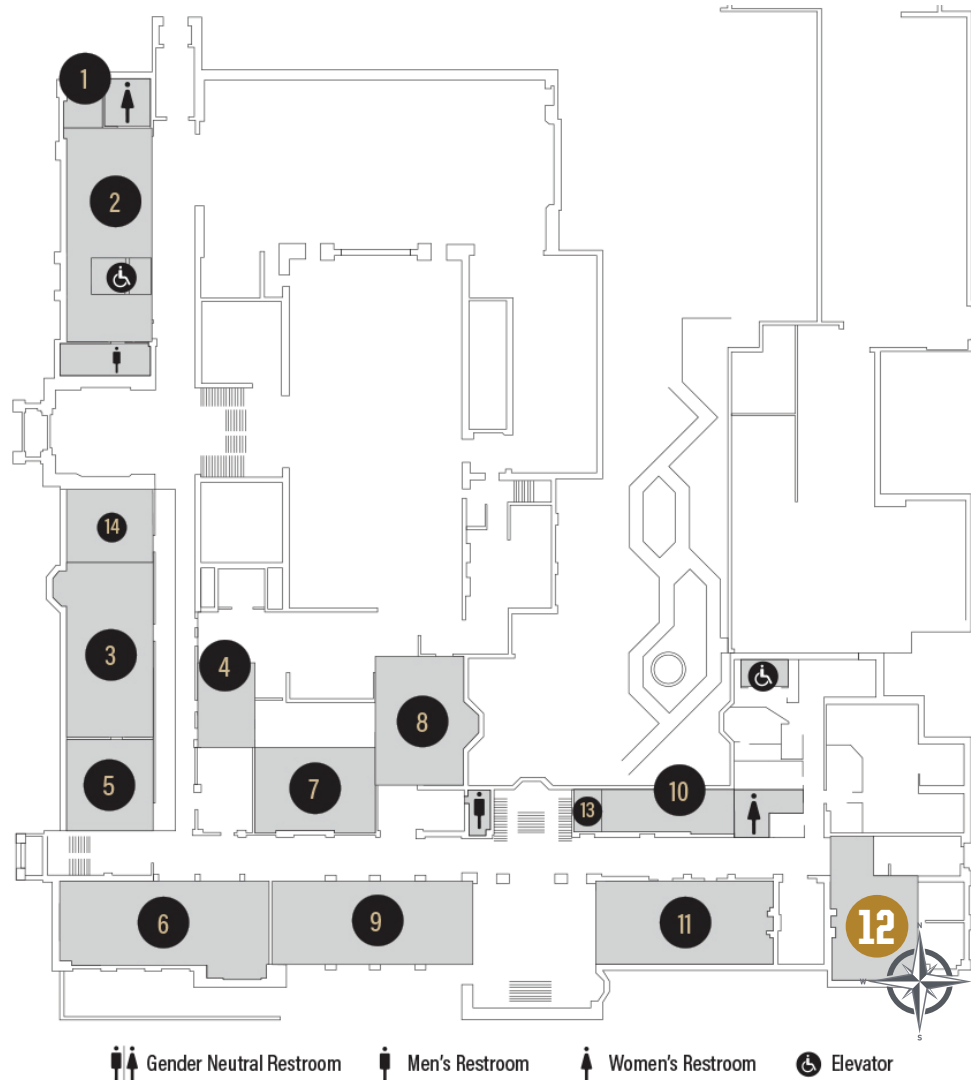
RETAIL TENANTS

- 3 UPS Store**
- 4 Fidelity Investments**
- 5 Purdue Federal Credit Union**
- 6 Evans, Piggot and Finney Eye Care**
- 7 Amazon @ Purdue**

FOOD VENUES

- 13 Leaps Coffee**
- 14 Boiler Up Bar**
- 15 8Eleven Modern Bistro**

PURDUE MEMORIAL UNION SECOND FLOOR



EVENT VENUES

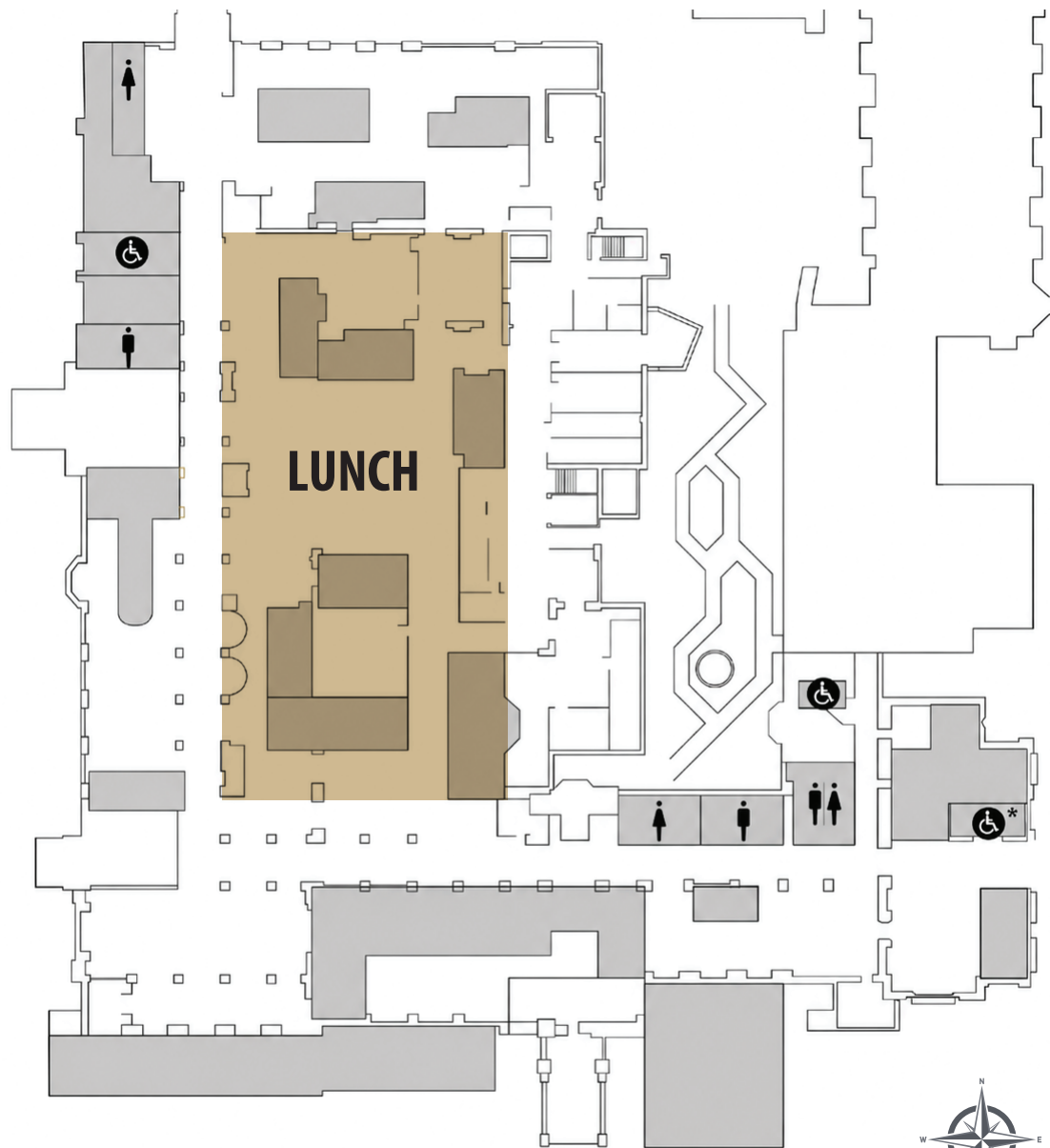
- 1** 288 Meeting Room
- 4** 263 Meeting Room
- 5** 256/258/260 Meeting Rooms
- 6** West Faculty Lounge
- 7** Director's Room
- 8** Sagamore Meeting Room
- 9** East Faculty Lounge
- 12** **Anniversary Drawing Room**
- 13** South Tower

OFFICE SUITES

- 2** Veteran Success Center
- 3** Purdue Student Union Board
- 10** Administration Office
- 11** UCH Sales & Event Services



PURDUE MEMORIAL UNION GROUND FLOOR



Gender Neutral Restroom



Men's Restroom



Women's Restroom



Elevator

**to Rack & Roll only*

The Conference Luncheon will take place on the ground level of the Purdue Memorial Union. Multiple buffet stations will be setup and attendees are able to utilize the seating areas throughout the ground level.

SUNDAY | OCTOBER 11

3:30 PM	Industrial Panel	STEW 202
4:00 PM	Tutorial: Composite AI	STEW 206
4:30 PM	Young Faculty Assembly	Purdue Memorial Union - Anniversary Drawing Room
6:30 PM	Welcome Reception	Purdue Memorial Union - Ballrooms

MONDAY | OCTOBER 12

7:00 AM	Light Breakfast	West Foyer, Stewart Center
7:45 AM	Opening and Welcome	Eckhard Groll Head, School of Mechanical Engineering
8:00 AM	Prager Medal Lecture	Loeb Playhouse, Stewart Center
9:15 AM	Technical Talks	STEW, RAWLS, KRAN
10:55 AM	Morning Break	STEW 302/306 and RAWLS
11:20 AM	Technical Talks	STEW, RAWLS, KRAN
12:30 PM	Lunch	Purdue Memorial Union - Ground Floor
2:00 PM	Y. Huang Engineering Science Medal Lecture	Loeb Playhouse, Stewart Center
3:00 PM	Afternoon Break	STEW 302/306 and RAWLS
3:30 PM	Technical Talks	STEW, RAWLS, KRAN
5:30 PM	Free Time	
6:00 PM	Reception & Poster Session	Purdue Memorial Union - Ballrooms



TUESDAY | OCTOBER 13

7:00 AM	Light Breakfast	West Foyer, Stewart Center
7:45 AM	Opening and Welcome	Nikhilesh Chawla Associate Dean for Research College of Engineering
8:00 AM	A.C. Eringen Medal Lecture	Loeb Playhouse, Stewart Center
9:15 AM	Technical Talks	STEW, RAWLS, KRAN
10:55 AM	Morning Break	STEW 302/306 and RAWLS
11:20 AM	Technical Talks	STEW, RAWLS, KRAN
12:30 PM	Lunch	Purdue Memorial Union - Ground Floor
2:00 PM	Technical Talks	STEW, RAWLS, KRAN
4:00 PM	Afternoon Break	STEW 302/306 and RAWLS
4:30 PM	Technical Talks	STEW, RAWLS, KRAN
4:30 PM	SES Member Meeting	STEW 214D
4:30 PM	NSF Presentation	STEW 320
6:10 PM	Free Time	
7:00 PM	Conference Banquet	Purdue Memorial Union - Ballrooms Pre-purchased Ticket Required for Entry (Found on Back of Conference Badge)

WEDNESDAY | OCTOBER 14

7:00 AM	Light Breakfast	STEW 302/306
8:00 AM	Technical Talks	STEW, RAWLS, KRAN
10:00 AM	Morning Break	STEW 302/306, RAWLS
10:30 AM	Technical Talks	STEW, RAWLS, KRAN
12:30 PM	Lunch	STEW 302/306
2:00 PM	Conference Concludes	

Event Agenda

SES Annual Technical Meeting 2026

Monday, October 12, 2026

7:00 - 5:00 PM

Conference Registration - STEW 109BC - 7:00 AM - 4:00 PM

7:00 AM - 8:00 AM

Light Breakfast, Lobby of Loeb Playhouse, STEW, 7:00 - 8:00 AM

7:45 AM - 8:00 AM

Opening Session & Welcome, Eckhard Groll, Reilly Distinguished Professor of Mechanical Engineering, William E. and Florence E. Perry Head of Mechanical Engineering, Purdue University

8:00 AM - 9:00 AM

Plenary Session

Location: Loeb Playhouse, Stewart Center

Speaker: Samuel Forest (Prager Medalist), Moderator: Vladislav YASTREBOV

9:15 AM - 10:55 AM

1.1.1: William Prager Medal Symposium in honor of Samuel Forest

Location: STEW 202

Moderators: Vladislav YASTREBOV

Laboratory Measurement of Local Stress and Strain Fields in Geometrically Complex Specimen

9:15 AM - 9:35 AM

Speaker: Vikram Deshpande, Cambridge University

Multiscale Modeling of Void Growth in Polycrystalline Media

9:35 AM - 9:55 AM

Speaker: Laurent Capolungo, Los Alamos National Laboratory

Fluctuations-Controlled Crystal Plasticity: The Role of Atomistic-Level Randomness in Crystal Deformation

9:55 AM - 10:15 AM

Speaker: Jaime Marian, University of California Los Angeles

Dislocation Mean Free Path Length as Function of Plastic Slip and Slip Gradient

10:15 AM - 10:35 AM

Speaker: Jeffrey Kysar, Columbia University

Recent Advances in Thermodynamics Considering Constrained Local Equilibria

10:35 AM - 10:55 AM

Speaker: David McDowell, Georgia Institute of Technology

9:15 AM - 10:55 AM

1.5.1: SES Student and Postdoctoral Award Symposium

Location: STEW 204

Moderators: Jialiang Le

Nucleation and Propagation of Fracture in Viscoelastic Elastomers: A Complete Phase-Field Theory

9:15 AM - 9:35 AM

Speaker: Farhad Kamarej, University of Illinois Urbana-Champaign

Multiscale Fatigue Crack Initiation in Hierarchical Additively Manufactured Alloys

9:35 AM - 9:55 AM

Speaker: Luc Capaldi, University of Pennsylvania

Toughening Lattice Metamaterials via Geometric Disorder and Stochastic Failure

9:55 AM - 10:15 AM

Speaker: Sage Fulco, Massachusetts Institute of Technology

Multi-Modal Haptic Actuators

10:15 AM - 10:35 AM

Speaker: Shupeng Li, Northwestern University

The Application of a Microcentrifuge Device for the At-Line Characterization of Bionanoparticles.

10:35 AM - 10:55 AM

Speaker: Taehong Kim, Purdue University

9:15 AM - 10:55 AM

2.9.1: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Zhenhua Tian

Soft, Responsive Bioresorbable Materials for Enhanced Ultrasound Imaging – Design, Experiments and Applications

9:15 AM - 9:35 AM

Speaker: John Rogers, Northwestern University

Soft, Responsive Bioresorbable Materials for Enhanced Ultrasound Imaging – Modeling and Optimization

9:35 AM - 9:55 AM

Speaker: Yonggang Huang, Northwestern University

Acoustofluidics: Manipulating Bioparticles Across 8 Orders of Magnitude

9:55 AM - 10:15 AM

Speaker: Tony Huang, Duke University

Bioadhesive Ultrasound for Health, AI, and Robotics

10:15 AM - 10:35 AM

Speaker: Xuanhe Zhao, MIT

Nonlinear Simulations for Cochlear Mechanics

10:35 AM - 10:55 AM

Speaker: Karl Grosh, University of Michigan

9:15 AM - 10:55 AM

2.3.1: Structure and Mechanics of Living and Bioinspired Materials

Location: STEW 214A

Moderators: Jingjie Yeo

Living Wood-Polymer Composites with Tunable Half-Lives and Enhanced Performance

9:15 AM - 9:35 AM

Speaker: Hortense Le Ferrand, Nanyang Technological University

Biogenic Reinforcement of 3D-Printed Hydrogel Lattice Structures via Fungal Hyphal Network Formation

9:35 AM - 9:55 AM

Speaker: Anand K. Mishra, Materials, and Aerospace Engineering, West Virginia University, Morgantown, WV 26506

Harnessing Ion-Stimulated Bonding in Mycelium for High-Performance Bio-Composites

9:55 AM - 10:15 AM

Speaker: Evgueni Filipov, University of Michigan

A Systematic Methodology for Structural Analysis of Reinforced Mycelium-Based Composites

10:15 AM - 10:35 AM

Speaker: Kwanwoo Yi, University of Michigan

Glass Particle-Filled Fungal Composites: Synthesis and Mechanics

10:35 AM - 10:55 AM

Speaker: Anwar Anik, University of Texas Rio Grande Valley

9:15 AM - 10:55 AM

2.5.1: Cell Mechanics and Mechanobiology

Location: STEW 214B

Moderators: Christian Franck, Shiva Rudraraju

A Universal Behavior in Polarized Cell Monolayers

9:15 AM - 9:35 AM

Speaker: Milad Shirani, Yale University

Traction and Stress Control Formation and Motion of +1/2

9:15 AM - 10:55 AM

Topological Defects in Epithelial Cell Monolayers

9:35 AM - 9:55 AM

Speaker: Jacob Notbohm, University of Wisconsin-Madison

Coupling Fibroblast Mechanotransduction Signaling to Tissue Growth in a Multiscale Model of Skin Expansion

9:55 AM - 10:15 AM

Speaker: Laura Nunez-Alvarez, Purdue University

Impact of Substrate Stiffness on Neutrophil-Candida Interactions Using Tfm

10:15 AM - 10:35 AM

Speaker: Baris Dedekarginoglu, University of Wisconsin-Madison

Synaptopodin Enables Directional Mechanoadaptation of Integrin-Based Adhesions under Perpendicular Loading

10:35 AM - 10:55 AM

Speaker: Chengqing Qu, Washington University in St. Louis

4.3.1: Leveraging Entanglement to Enhance the Multi-physical Properties of Networked Materials Across Scales

Location: STEW 214C

Moderators: Asaf Dana

Three Faces of Polymer Entanglements

9:15 AM - 9:35 AM

Speaker: Michael Rubinstein, Duke University

Topological Distillation of Entangled Polymers for Physics-Based Multi-Scale Computational Mechanics

9:55 AM - 10:15 AM

Speaker: B M Shahi Sifat Mottaqin, Binghamton University

Topology Engineering for Fracture-Resistant Polymer Networks

10:15 AM - 10:35 AM

Speaker: Junsoo Kim, Northwestern University

Mesoscale Modeling of Highly Entangled Networks

10:35 AM - 10:55 AM

Speaker: Saleh Assadi, University of Colorado Boulder

9:15 AM - 10:55 AM

3.4.1: Mechanics of Materials and Structures for In-Space Manufacturing and Deployable Structures

Location: STEW 214D

Moderators: Sameh Tawfick

Mission "Illinois" Architecture for In-Space Manufacturing of Cfrp Longerons via Frontal Polymerization

9:15 AM - 9:35 AM

Speaker: Nawaf Rasheed, Beckman Institute for Advanced Science and Technology

In-Space Reversible and Permanent Assembly of Additively Manufactured Multifunctional Composites

9:55 AM - 10:35 AM

Speaker: Yao Yao, University of Illinois Urbana-Champaign

Welding and Unwelding Behavior of Cf-PEEK Composite Joints Using Embedded Resistance Heaters Integrated with PEEK Films

10:35 AM - 10:55 AM

Speaker: Junho Hwang, Purdue University

9:15 AM - 10:55 AM

3.5.1: Direct Ink Writing: From Process Mechanics and Control to Microstructure and Architected Materials

Location: STEW 218A

Moderators: Jochen Mueller

Active-Reactive Mixing with In-Situ Monitoring and Control for Direct Ink Writing with Frontal Polymerization

9:15 AM - 9:35 AM

Speaker: Pranav Krishnan, University of Illinois Urbana-Champaign

9:15 AM - 10:55 AM

Agile Manufacturing Enabled by Radical Induced Frontal Polymerization of Thermoset Composites

9:35 AM - 9:55 AM

Speaker: A B M Tahidul Haque, University of Alabama

High-Throughput In-Situ Assessment of Direct Ink Written (Diw) Polymers through Ultrasonic Attenuation Spectroscopy

9:55 AM - 10:15 AM

Speaker: Saurabh Bagare, The Pennsylvania State University

Physics-Based Scaling of Optimal Layer Time with Print Scale in Material Extrusion Additive Manufacturing

10:15 AM - 10:35 AM

Speaker: Ethan Kessel, Purdue University

3D Printing with Subvoxel Resolution

10:35 AM - 10:55 AM

Speaker: Daniel Ames, Johns Hopkins University

3.8.1: Programmable Morphing Matter: Bridging Bioinspiration, Mechanics, and Autonomous Design

Location: STEW 218B

Moderators: Lining Yao

Scalable Active Metamaterials for Shape-Morphing

9:15 AM - 9:35 AM

Speaker: Jipeng Cui, Texas A&M University

Robust Snapping-Enabled Wood Springs for Self-Penetrating Seed Shelters in Aerial Seeding

9:35 AM - 9:55 AM

Speaker: Haitao Qing, University of California

Constitutive Modeling and Parametric Study of Multi-Responsive Thermal-Light Shape Memory Polymers

9:55 AM - 10:15 AM

Speaker: Puja Dethe, New Jersey Institute of Technology

Dual-Programmable Architected Magnetic Soft Materials: Tuning Mechano-Electric Responses by Inverse Design

10:15 AM - 10:35 AM

Speaker: Zhi Zhao, University of Illinois Urbana Champaign

Increasing Inter-Micellar Connectivity Toughens and Imparts Cooling-Induced Shape Memory in Micellar Hydrogels

10:35 AM - 10:55 AM

Speaker: Eric Yang, Northwestern University

9:15 AM - 10:55 AM

4.8.1: High Entropy Alloys and Metallic Glasses: Taming Order in Disorder

Location: STEW 218C

Moderators: Qi An

Fundamental Governing Principles of Irradiation Resistance in Compositionally Complex Alloys

9:15 AM - 9:35 AM

Speaker: Jaime Marian, UCLA

Observation of Short-Range Order in Refractory High-Entropy Alloys from Atomic-Positions Deviation Using Stem and Atomistic Simulations

9:35 AM - 9:55 AM

Speaker: Wei Chen, University at Buffalo

Effects of Chemical Short-Range Order on Basic Structural and Mechanical Properties: From Dilute Alloys to Multi-Principal Element Alloys

9:55 AM - 10:15 AM

Speaker: Shuozhi Xu, University of Oklahoma

Dislocation Properties in Refractory Compositionally Complex Alloys

10:15 AM - 10:35 AM

9:15 AM - 10:55 AM

Speaker: Haixuan Xu, University of Tennessee

Atomistic Processes of High-Temperature Deformation of Nanoscale Body-Centered Cubic Tungsten

10:35 AM - 10:55 AM

Speaker: Changxin Han, Purdue University

4.11.1: Mechanics of Energetic Materials

Location: STEW 218D

Moderators: Brandon Runnels

Shear Bands and Their Implications for Energy Localization in Energetic Materials

9:15 AM - 9:55 AM

Speaker: Uday Kumar, University of Iowa

Halogenation Effects on Polymer Adhesion to High Explosive Crystals

9:55 AM - 10:15 AM

Speaker: Matthew Kroonblawd, Lawrence Livermore National Laboratory

Connecting Large-Scale Molecular Dynamics with the Macroscale to Predict Shock to Detonation Using Microstructure-Aware Deep Learning

10:15 AM - 10:35 AM

Speaker: Simon Gonzalez, Purdue University

Modeling Impact Response of Pbx With/Without Metallic Booster under Weak to Moderate Loads

10:35 AM - 10:55 AM

Speaker: Muhammad Shahin, Purdue University

9:15 AM - 10:55 AM

3.7.1: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Wanliang Shan

Highly Deformable Proprioceptive Membrane for Real-Time 3D Shape Reconstruction

9:15 AM - 9:35 AM

Speaker: Guanyu Xu, University of Michigan, Ann Arbor

Passive Amphibious Adaptation in a Soft Robot Enabled by a Light-Driven Artificial Muscle and Hydrogel-Mediated Fin Deployment

9:35 AM - 9:55 AM

Speaker: Shukun Yin, California Institute of Technology

Rotational Multimaterial 3D Printing of Soft Robotic Matter with Subvoxel Control

9:55 AM - 10:15 AM

Speaker: Natalie Larson, Stanford University

Scalable Manufacturing of Ionic Circuits by Photo-Functionalization of Sebs Rubber

10:15 AM - 10:35 AM

Speaker: Max Tepermeister, Caltech Institute of Technology

From Confined Sheet Buckling to Soft Swarm Façades for Adaptive Shading and Human Interaction

10:35 AM - 10:55 AM

Speaker: Lucia Stein-Montalvo, Northwestern University

9:15 AM - 10:55 AM

4.2.1: Advances on the Mechanics of Architected Materials

Location: STEW 279

Moderators: Lucas Meza

Homogenizing Origami Metamaterials

9:15 AM - 9:35 AM

Speaker: Paul Plucinsky, University of Southern California

Transforming Kirigami into Rigid Origami via Crease Design

9:35 AM - 9:55 AM

Speaker: Suyu Luohong, University of Oxford

9:15 AM - 10:55 AM

Dynamic Bifurcation of Resch-Patterned Origami for Self-Adaptive Impact Mitigation

9:55 AM - 10:15 AM

Speaker: Yasuhiro Miyazawa, Seoul National University

Shell Dominated Mechanics in Microscale Kresling Origami

10:15 AM - 10:35 AM

Speaker: Andrea Exil, University of Washington

2.6.1: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310

Moderators: Farid Alisafaei, Guy Genin

Regulation of Nuclear Pore Complex Mechanomemory by Cytoskeletal Prestress and Matrix Viscoelasticity

9:15 AM - 9:35 AM

Speaker: Ning Wang, Northeastern University

Mechanogenetics for Cell Immunotherapy

9:35 AM - 9:55 AM

Speaker: Fan Wei, usc

Dissecting T-Cell Mechanoimmunology for Mechano-Immunotherapy: New Tales from New Tools

9:55 AM - 10:15 AM

Speaker: Yinnian Feng, Northeastern University

Cell-Fluid Interaction during Cell Volume Regulation and Cell Migration

10:15 AM - 10:35 AM

Speaker: Sean Sun, Johns Hopkins University

9:15 AM - 10:55 AM

4.10.1: Advances in Experimental and Modeling Studies of High Strain-Rate Mechanics

Location: STEW 311

Moderators: Jae-Hwang Lee

A High-Throughput Exploration of Shock Response in Al-Mg Binary Alloy

9:15 AM - 9:55 AM

Speaker: K T Ramesh, Johns Hopkins University

Accelerated mapping of metallurgical impact bonding of GRX 810 Nickel ODS AM alloys using laser induced particle impact testing (LIPIT)

9:55 AM - 10:15 AM

Speaker: Suhas Eswarappa Prameela, University of Utah

Taylor-Quinney Coefficient Determination from Strain and Temperature Measurements in Tensile Shb Tests

10:15 AM - 10:35 AM

Speaker: Amos Gilat, Ohio State University

9:15 AM - 10:55 AM

6.4.1: Soft Hydraulics: Low-Reynolds-number Hydrodynamics and Fluid-structure Interactions

Location: STEW 313

Moderators: Ivan C. Christov

Three-Dimensional Soft Streaming

9:15 AM - 9:35 AM

Speaker: Songyuan Cui, Mechanical Science and Engineering, University of Illinois at Urbana-Champaign

Rolling and Sliding Friction between Textured Soft Lubricated Surfaces

9:35 AM - 9:55 AM

Speaker: Bhargav Rallabandi, University of California

Bubble-Burst-Induced Puddle Jumping and Jet Printing

9:55 AM - 10:15 AM

Speaker: Jiangtao Cheng, Virginia Tech

Elasto-Viscoplastic Rheology of Elastic Particle

9:15 AM - 10:55 AM

Suspensions in Yield Stress Fluids

10:15 AM - 10:35 AM

Speaker: Pedro Ponte-Castañeda, University of Pennsylvania

1.3.1: Y. Huang Engineering Science Medalist Symposium in Honor of Dimitris C. Lagoudas: Smart and Multifunctional Materials

Location: STEW 314

Moderators: Bjoern Kiefer

Multiscale Engineering of Shape Memory Alloys: From Transformation Physics to Multifunctional Systems

9:15 AM - 9:35 AM

Speaker: Ibrahim Karaman, Texas A&M University

Shape Memory Alloy Structures: Modeling, Simulation, and Experiments

9:35 AM - 9:55 AM

Speaker: Chad Landis, University of Texas at Austin

In-Plane Crushing and Recovery of Niti Circular Cell Honeycombs

9:55 AM - 10:15 AM

Speaker: Jacob Greenly, University of Texas at Austin

Analysis and Design of Tow-Steered Composite Lamina via a Parameterized Vector Field Approach with Applications to Aero-Structural Morphing

10:15 AM - 10:35 AM

Speaker: Darren Hartl, Texas A&M University

Shaping Adoption: The General Motors (Gm) - University of Michigan (Um) Smart Materials & Structures Collaborative Research Lab's Role in Catalyzing Automotive Shape Memory Alloy Technologies

10:35 AM - 10:55 AM

Speaker: Diann Brei, University of Michigan

9:15 AM - 10:55 AM

1.7.1: Structural Changes in Materials at Normal and Extreme Conditions: A Symposium in Honor of the 70th Birthday of Prof. Valery Levitas

Location: STEW 320

Moderators: Ashraf Bastawros

Advances in Interaction between Severe Plastic Deformations, Phase Transformations, and Microstructure Evolution

9:15 AM - 9:55 AM

Speaker: Valery Levitas, Iowa State University of Science and Technology

State Transitions of Dislocation Ensembles: Implications of Constrained Local Equilibrium States

9:55 AM - 10:15 AM

Speaker: David McDowell, Georgia Institute of Technology

Uncovering Origins of Heterogeneous Superconductivity in La₃Ni₂O₇ Using Quantum Sensors

10:15 AM - 10:35 AM

Speaker: Srinivas Mandyam, Harvard University

9:15 AM - 10:55 AM

6.2.1: Dynamics, Instabilities, and Singularities in Free Surface Flows

Location: RAWLS 1011

Moderators: Osman Basaran, Hansol Wee

Print or Perish: Instabilities and Limits in Embedded and Free-Surface 3D Printing

9:15 AM - 9:35 AM

Speaker: Randy Ewoldt, University of Illinois Urbana-Champaign

Radical Scaling, Dimensional Mechanics, and Stretched

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

Polymer Physics & Rheology

9:35 AM - 9:55 AM

Speaker: Vivek Sharma, University of Illinois Chicago

Pearling, Buckling, and Wrinkling Instabilities of Multicomponent Vesicle Threads

9:55 AM - 10:15 AM

Speaker: Vivek Narsimhan, Purdue University

Old Questions and New Opportunities in Fluid Filament Stability: Soluble Surfactants and Salivary Strings

10:15 AM - 10:35 AM

Speaker: Harishankar Manikantan, University of California

7.1.1: Scientific Machine Learning for Computational Mechanics

Location: RAWLS 1057

Moderators: Mina Karimi

Amortized Variational Inference for State and Parameter Estimation in Dynamical Systems with Incomplete Observations

9:15 AM - 9:35 AM

Speaker: Motahareh Mirfarah, Purdue University

Stabilizing Pde-ML Systems with Applications to Fluid Dynamics

9:35 AM - 9:55 AM

Speaker: Panos Stinis, Pacific Northwest National Laboratory

A Binned Spectral Loss for Learning the Evolution of Chaotic Dynamical Systems on Large Unstructured Meshes

9:55 AM - 10:15 AM

Speaker: Kanad Sen, Purdue University

7.12.1: Coupled Mechanics of Soft Solids

Location: RAWLS 1062

Moderators: Eric M. Stewart, Vikas Srivastava

Coupled Modeling of Rheological Behavior and Size-Segregation Dynamics in Bidisperse Granular Media

9:15 AM - 9:35 AM

Speaker: David Henann, Brown University

Elastocapillarity Driven Deformation of Liquid Inclusions Embedded in Soft Solid Media

9:35 AM - 9:55 AM

Speaker: Oluwadara Moronkeji, University of Illinois Urbana Champaign

A Constitutive Framework for Modeling the Evolution of Stiffening Materials

9:55 AM - 10:15 AM

Speaker: Ignasius Wijaya, University of Illinois at Urbana-Champaign

Poroeplastoplastic Behavior of Bacterial Cellulose Hydrogels under Large Deformation

10:15 AM - 10:35 AM

Speaker: Dongjing He, Columbia University

The Influence of Geometry and Stress on Propagation of Frontal Polymerization

10:35 AM - 10:55 AM

Speaker: Xuanhe Li, Massachusetts Institute of Technology

9:15 AM - 10:55 AM

7.11.1: AI for Advanced Materials and Structures

Location: RAWLS 1071

Moderators: Xiaoyu (Rayne) Zheng, Marco Maurizi

A Multi-Fidelity Framework of Bayesian Neural Operator for Mechanics of Spinodal Material

9:15 AM - 9:35 AM

Speaker: Pu You, Northwestern University

Topology-Aware Neural Graph Operator (Tango) for Material Constitutive Laws

9:35 AM - 9:55 AM

Speaker: Arman Moussavi, Northwestern University

A Data-Driven Deep Material Network (Dmn) Surrogate for Fe2 in Multiscale Topology Optimization of Hyperelastic Composites Undergoing Finite Deformations

9:55 AM - 10:15 AM

Speaker: Abdulmajeed Altassan, Georgia institute of technology

Data-Driven Constitutive Modeling of Elastomeric Foams Informed by Micromechanical Modeling

10:15 AM - 10:35 AM

Speaker: Andrew Bagnoli, Brown University

Learning and Inverting Constitutive Priors for Inverse Design of Material Systems

10:35 AM - 10:55 AM

Speaker: Jinkyoo Han, Northwestern University

9:15 AM - 10:55 AM

6.1.1: Mechanics of Granular Media: Experiments, Theory, and Modeling

Location: RAWLS 1086

Moderators: Ken Kamrin

Weakly-Cohesive Granules Characterized via Orifice Flow Fluctuations

9:15 AM - 9:35 AM

Speaker: Paul Mort, Purdue University

A Resistive Force Theory for Purely Cohesive Media with Von Mises Yielding

9:35 AM - 9:55 AM

Speaker: Thomas Yu, University of California

Cohesion-Driven Agglomeration and Segregation in Bounded Heap Flow

9:55 AM - 10:15 AM

Speaker: Qiong Zhang, Northwestern University

Surface Tension in Non-Equilibrium Steady-States.

10:15 AM - 10:35 AM

Speaker: Mark D Shattuck, The City College of New York

Structure-Dynamics Relations in a Vibrated Two-Dimensional Granular Raft at Air-Liquid Interface

10:35 AM - 10:55 AM

Speaker: Hongyi Xiao, University of Michigan

9:15 AM - 10:55 AM

5.3.1: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

Shape-Morphing Elastic Robotic Structures for Interactive Architectural Applications

9:15 AM - 9:35 AM

Speaker: Federico Bosi, University College London

Snapping Instabilities for Multimodal 3D Maneuverable Soft Swimmer

9:35 AM - 9:55 AM

Speaker: Jie Yin, North Carolina State University

Formation of Three-Dimensional Graphite Auto-Kirigami via Structural Instabilities

9:55 AM - 10:15 AM

Speaker: Minh Quan Vo, University of Pennsylvania

Magish: Magnetically Switched Bistable Swimming for Insect-Scale Robotic Fish

10:15 AM - 10:35 AM

Speaker: Haobo Fang, University of Michigan

9:15 AM - 10:55 AM

5.2.1: Instabilities and Nonlinear Mechanics Across Structural Scales

Location: KRAN G010

Moderators: Fani Derveni

What Engineers Avoid Nature Harnesses Across Architected Materials and Structures

9:15 AM - 9:55 AM

Speaker: Pablo Zavattieri, Purdue University

Selective and Tunable Multistability in Tile-Based Pneumatic Origami via Architecturally Coupled Actuation

9:55 AM - 10:15 AM

Speaker: Tiantian Li, Cornell University

Self-Deployment of Curved-Crease Origami Parabolic Dishes

10:15 AM - 10:35 AM

Speaker: Ilyes Krida, university of Houston

Go with Gravity: Functional Shape Selection in Large-Scale Soft Materials

10:35 AM - 10:55 AM

Speaker: Lauren Carelil Dreier, University of California Santa Barabara

9:15 AM - 10:55 AM

5.4.1: Complex Rheology in Polymeric Materials and Structures

Location: KRAN G012

Moderators: Jiawei Yang

Strain-Induced Crystallization in Viscoelastic Polymer Networks

9:15 AM - 9:35 AM

Speaker: Ruobing Bai, Northeastern University

Resolving Soft Fracture Contributions via Cutting

9:35 AM - 9:55 AM

Speaker: Shelby Hutchens, University of Illinois Urbana-Champaign

Resolving Toughness-Modulus Conflict in Carbon Black Reinforced Natural Rubber by Preserving Long Chains

9:55 AM - 10:15 AM

Speaker: Chenghai Li, Harvard University

Measuring Poisson's Ratio of Nearly Incompressible Gels and Elastomers through Surface Acoustic Waves

10:15 AM - 10:35 AM

Speaker: Christopher Barney, The University of Akron

Modeling of Polymer Rheology with Fractional Calculus

10:35 AM - 10:55 AM

Speaker: Nihal Pushkar, Iowa State Univesity

9:15 AM - 10:55 AM

5.5.1: Mechanics of Failure in Network Materials

Location: KRAN G018

Discrete Network Models for Damage Mechanics and Multi-Scale Structure-Property Prediction in Polymer Networks

9:15 AM - 9:35 AM

Speaker: Robert Wagner, Binghamton University

Extraordinarily High Fractocohesive Lengths in Polymer-Like Networks

9:35 AM - 9:55 AM

Speaker: Chase Hartquist, University of Florida

A Discrete Hrr-Like Theory for Fracture in Nonlinear Spring Networks

9:55 AM - 10:15 AM

Speaker: Juntao Huang, University of Delaware

On the Effective Tensile Strength and Fracture Toughness of Periodic 2D Networks

10:15 AM - 10:55 AM

Speaker: Rui Huang, University of Texas at Austin

9:15 AM - 10:55 AM

5.7.1: Mechanics of Damage, Fracture and Friction in Materials Across Scales

Location: KRAN G020

Moderators: Ahmed Elbanna

Poroelastic Effects in the Near-Tip Region of a Propagating Hydraulic Fracture

9:15 AM - 9:55 AM

Speaker: Evgenii Kanin, Institute of Civil Engineering

Mechanisms for Near-Tip Residual Field Formation in Soft Materials under Cyclic Loading

9:55 AM - 10:15 AM

Speaker: Dan Wang, ETH Zürich

Friction-Fracture Interrelationship in Soft Solids via Needle Insertion

10:15 AM - 10:35 AM

Speaker: Srividhya Sridhar, University of Illinois Urbana Champaign

10:55 AM - 11:20 am

BREAK | Hospitality Rooms: STEW 302/306 & Rawls Atrium

11:20 AM - 1:00 PM

1.1.2: William Prager Medal Symposium in honor of Samuel Forest

Location: STEW 202

Moderators: Vladislav YASTREBOV

Mechanics-Guided Deterministic 3D Assembly

11:20 AM - 11:40 AM

Speaker: Yonggang Huang, Northwestern University

Pneumatically Actuated Porous Elastomers: Macroscopic Instabilities and Twinning

11:40 AM - 12:00 PM

Speaker: Pedro Ponte-Castañeda, University of Pennsylvania

Scale- and Microstructure-Aware Modelling of Polycrystals and Other Heterogenous Materials Using Fast Fourier Transform (Fft)-Based Formulations

12:00 PM - 12:20 PM

Speaker: Ricardo Lebensohn, Los Alamos National Laboratory

Statistical Physics of Porosity-Based Ductile Damage in Polycrystalline Metallic Materials

12:20 PM - 12:40 PM

Speaker: Curt Bronkhorst, University of Wisconsin - Madison

11:20 AM - 1:00 PM

1.5.2: SES Student and Postdoctoral Award Symposium

Location: STEW 204

Moderators: Pablo Zavattieri

Biointegrated Microfluidic and Soft Robotic Platforms for Functional Interaction of Organoids and Ex Vivo Tissues

11:20 AM - 11:40 AM

Speaker: Qiong Wang, Northwestern Querrey Simpson Institute for Bioelectronics

Manipulating Light Transmission Using Soft Composites

11:40 AM - 12:00 PM

Speaker: Yijie Cheng, Michigan State University

Microstructural Control of Liquid Metal Composites for Programmable Mechanical and Thermal Anisotropy via Direct Ink Writing

12:00 PM - 12:20 PM

Speaker: Ohnyoung Hur, Virginia Tech, Soft Materials and Structures Lab

Armadillo-Inspired Active Morphing Skeletons for Soft Machines

12:20 PM - 12:40 PM

Speaker: Jianyu Zhou, North Carolina State University

11:20 AM - 1:00 PM

2.9.2: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Zhenhua Tian

Shaping Ultrasound and Its Interaction with Cells

11:20 AM - 11:40 AM

Speaker: Peer Fischer, Max Planck Institute for Medical Research

Nonlinear Acoustofluidics from Capillary Waves to Sonogenetics

11:40 AM - 12:00 PM

Speaker: James Friend, Washington University in St Louis

Born Approximations of Acoustic Radiation Force for Standing and Progressive Waves

12:00 PM - 12:20 PM

Speaker: Chirag A. Gokani, University of Texas at Austin

Deep-Penetration Acoustic Volumetric Printing

12:20 PM - 12:40 PM

Speaker: Y. Shrike Zhang, Harvard Medical School

Acoustic Vortex End-Effector Robots for Contactless Multi-Dof Object Manipulation

12:40 PM - 1:00 PM

Speaker: Zhenhua Tian, Virginia Polytechnic Institute and State University

11:20 AM - 1:00 PM

2.3.2: Structure and Mechanics of Living and Bioinspired Materials

Location: STEW 214A

Moderators: Si Chen

Quantifying the Structure-Property Relationships of Lichen and Lichen-Like Materials

11:20 AM - 11:40 AM

Speaker: Kōnane Bay, University of Colorado Boulder

Bridging Length Scales: The Mechanical Response of Spider Silk Fibers

11:40 AM - 12:00 PM

Speaker: Noy Cohen, Technion - Israel Institute of Technology

Jelly Fungi: The Structure and Mechanics of a Natural Hydrogel

12:00 PM - 12:20 PM

Speaker: Debora Lyn Porter, University of California Merced

Stretchable Optoelectronic Interfaces for Wireless Cardiac Control

12:20 PM - 12:40 PM

Speaker: Zhoulyu Rao, University of Illinois Urbana-Champaign

11:20 AM - 1:00 PM

2.5.2: Cell Mechanics and Mechanobiology

Location: STEW 214B

Moderators: Christian Franck, Shiva Rudraraju

Directional Steering of Confined Neural Crest Cells via Boundary-Contact Repolarization

11:20 AM - 11:40 AM

Speaker: Aditya Paspunurwar, Purdue University

Cyclic Tension Anisotropy Regulates Fibroblast Activation and Mechanical Memory Formation

11:40 AM - 12:00 PM

Speaker: Meilin Gao, Washington University in Saint Louis

Cancer-Associated Fibroblast Contractility Governs Matrix Stiffness through Competing Mechanical and Enzymatic Remodeling

12:00 PM - 12:20 PM

Speaker: Bashar Emon, University of Illinois Urbana-Champaign

Relating Cell-Substrate Adhesion Mechanics with the Morphological Changes of Human Microglial Cell Lines under Repeated Loading Scenario

12:20 PM - 12:40 PM

Speaker: Sumaya Sharmin, The University of Texas at Arlington

Shear Lag Mechanics Predicts Force Amplification and Foot Process Loss in Podocyte Disease

12:40 PM - 1:00 PM

Speaker: Mingxuan {monica} Bi, Washington University in St. Louis

11:20 AM - 1:00 PM

4.3.2: Leveraging Entanglement to Enhance the Multi-physical Properties of Networked Materials Across Scales

Location: STEW 214C

Moderators: Asaf Dana

Liquid Crystal Elastomers with Slidable Crosslinks for Enhanced Damping and Switchable Adhesion

11:20 AM - 11:40 AM

Speaker: Suk-Kyun Ahn, Pusan National University

Mechanics of Polymer Networks with Slipping Cross-Links

11:40 AM - 12:00 PM

Speaker: Shaoting Lin, Michigan State University

Toughening Polymers via Voxelized Sound-Field Topology Programming

12:00 PM - 12:20 PM

Speaker: Zebang Zhang, University of Wisconsin-Madison

Interfacial Design of Pmma Nanocomposites through Nanoparticle Surface Roughness and Polymer Grafting

12:20 PM - 12:40 PM

Speaker: Haoyu Wang, Clemson University

Beyond Clasped Fibers: Untangling the Toplogy and Contact Interactions in Many-Fiber Assemblies

12:40 PM - 1:00 PM

Speaker: Michael Dimitriyev, Texas A&M University

11:20 AM - 1:00 PM

3.4.2: Mechanics of Materials and Structures for In-Space Manufacturing and Deployable Structures

Location: STEW 214D

Moderators: Ioannis Chasiotis

Programmable Liquid Metal Emulsion Inks for On-Demand Multifunctional 3D Printing in Space

11:20 AM - 11:40 AM

Speaker: Eric Markvicka, University of Nebraska Lincoln

Thermally Gated Frontal Polymerization for In-Space Manufacturing: Mechanisms of Particle-Scale Activation and Front Interaction

11:40 AM - 12:00 PM

Speaker: Kazi Zahir Uddin, University of Illinois Urbana-Champaign

Particle Morphology Effects on Cure Kinetics in Shelf-Stable Resins for In-Space Manufacturing

12:00 PM - 12:20 PM

Speaker: Morgan Scott, University of Illinois Urbana-Champaign

11:20 AM - 1:00 PM

A Braided Hierarchical Lce Fiber Bundle for Underwater Actuation

12:20 PM - 12:40 PM

Speaker: Fangjie Qi, North Carolina State University

From Atoms to Space: Bridging Scales in Extreme Mechanics

12:40 PM - 1:00 PM

Speaker: Huck Beng Chew, University of Illinois at Urbana-Champaign

3.5.2: Direct Ink Writing: From Process Mechanics and Control to Microstructure and Architected Materials

Location: STEW 218A

Moderators: Jordan Raney

Multi-Modal, Multi-Material Extrusion 3D Printing System

11:20 AM - 11:40 AM

Speaker: Hector Grijalva-Pazos, Massachusetts Institute of Technology

Print Path Planning and Nozzle Offset Design for Multi-Material Lattices

11:40 AM - 12:00 PM

Speaker: Jochen Mueller, Department of Civil and Systems Engineering, Johns Hopkins University

Multi-Viscosity 3D Printing of Integrated Thin Films for Soft Robotics

12:00 PM - 12:20 PM

Speaker: Nathan C Brown, Johns Hopkins University

Metal Viscous Thread Printing

12:20 PM - 12:40 PM

Speaker: Brett Emery, Northeastern University

11:20 AM - 1:00 PM

3.8.2: Programmable Morphing Matter: Bridging Bioinspiration, Mechanics, and Autonomous Design

Location: STEW 218B

Moderators: Tahidul Haque

Present and Future of Programmable Material Systems: A US National Science Foundation Perspective

11:20 AM - 11:40 AM

Speaker: Siddiq Qidwai, US National Science Foundation

Improving Phototropic Actuation in Printable Lces via Tni Reduction

11:40 AM - 12:00 PM

Speaker: Alexander L. Evenchik, Northwestern University

Physical Learning in Adaptive Metamaterials for Real-Time Response to Unknown Environments

12:00 PM - 12:20 PM

Speaker: Maria Sakovsky, Stanford University

Deployable Origami Wing with Precise Airfoil and High Packaging Efficiency

12:20 PM - 12:40 PM

Speaker: Jinkyu Yang, Seoul National University

Cephalopod-Inspired Soft Photonic Skins with Dynamic Texture and Color Control

12:40 PM - 1:00 PM

Speaker: Siddharth Doshi, Stanford University

11:20 AM - 1:00 PM

4.8.2: High Entropy Alloys and Metallic Glasses: Taming Order in Disorder

Location: STEW 218C

Moderators: Lin Li

Emergent Order from Disorder: Strain-Coupled Spinodal Pathways to Highly Ordered, Fully Coherent Multiphase Nanostructures in High-Entropy Alloys

11:20 AM - 11:40 AM

Speaker: Yunzhi Wang, The Ohio State University

Active Learning for Oxidation Resistance in High Temperature Structural Alloys

11:40 AM - 12:00 PM

Speaker: Michael Titus, Purdue University

Microstructure-Enabled Strength-Ductility Balance of Single/Dual-Phase High-Entropy Alloys

12:00 PM - 12:20 PM

Speaker: Jian Wang, University of Nebraska - Lincoln

Multiscale Heterogeneous Structures in an Al-Containing Refractory High Entropy Alloy

12:20 PM - 12:40 PM

Speaker: Yufeng Zheng, University of North Texas

Nanoindentation Behavior and Strengthening Mechanisms of Hfzrtinb Multi-Principal Element Alloys

12:40 PM - 1:00 PM

Speaker: Yifan Zhang, Clemson University

11:20 AM - 1:00 PM

4.11.2: Mechanics of Energetic Materials

Location: STEW 218D

Moderators: Emma Boyd

Dislocation and Twin Mediated High Strain Rate Deformation of Single Crystal Beta-Hmx

11:20 AM - 12:00 PM

Speaker: Vinamra Agrawal, Los Alamos National Laboratory

Subzero Temperatures and High-Strain Rate Effects on the Response of Polymer Binder-Crystal Interfaces in Energetic Materials

12:00 PM - 12:20 PM

Speaker: Matthew Campbell, Purdue University

Fracture Toughness of Alumina Particle-Silicone Matrix Mock Energetic Composites Using Miniaturized Pure Shear

12:20 PM - 12:40 PM

Speaker: Maneesha Sahni, University of Delaware

A Conservative Phase Field Model for Aluminum Agglomeration in Solid Composite Propellants

12:40 PM - 1:00 PM

Speaker: Matthew Mehrtens, Iowa State University

11:20 AM - 1:00 PM

3.7.2: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Wanliang Shan

Towards Miniature Soft Robotics in Confined Fluidic Environments

11:20 AM - 11:40 AM

Speaker: Tianlu Wang, University of Hawaii at Manoa

Monolithic Liquid Crystal Elastomer Spirals for Scalable Soft Robotic Actuation

11:40 AM - 12:00 PM

Speaker: Seol-Yee {jennifer} Lee, North Carolina State University

Electro-Pneumatic Hydrogen in a Soft Actuator with an Embedded Flexible Fuel Cell

12:00 PM - 12:20 PM

Speaker: Samuel Kirschner, Massachusetts Institute of Technology

Physical Learning through Optical Feedback in an Optomechanical Reservoir

12:20 PM - 12:40 PM

Speaker: Philip Buskohl, Air Force Research Laboratory

Takeoff of Robust Insect-Scale Flying Robots Powered by a Soft Electrostrictive Flapping Actuator

12:40 PM - 1:00 PM

Speaker: Wenzhong Yan, UC Davis

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

4.2.2: Advances on the Mechanics of Architected

Materials

Location: STEW 279

Moderators: Lucas Meza

Swiveling into Shape: 3D Auxetic Metamaterials from Origami Cubes

11:20 AM - 11:40 AM

Speaker: Yue {luna} Zheng, Drexel University

Discrete and Continuum Modeling of a 3D Mechanism-Based Auxetic Metamaterial

11:40 AM - 12:00 PM

Speaker: Dengge Jin, University of Pennsylvania

Mechanics of Microtrichia-Enhanced Reversible Interlocking Structures

12:00 PM - 12:20 PM

Speaker: Marie Kate Palau Andrade, Purdue University

2.6.2: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310

Moderators: Hanxun Jin, Guy Genin

Multiscale Computational Modeling of Arterial Wall Growth and Remodeling

11:20 AM - 11:40 AM

Speaker: Victor Barocas, University of Minnesota

Measurements of Absolute Values of Young's Modulus of Cell Body and Parameters of Pericellular Layer: Theory and Experiments

11:40 AM - 12:00 PM

Speaker: Igor Sokolov, Tufts University

Tension Anisotropy Induces Long-Term Fibroblast Activation

12:00 PM - 12:20 PM

Speaker: Farid Alisafaei, New Jersey Institute of Technology

Elastin Degradation Disrupts Affine Nuclear Deformation in Tricuspid Valve Interstitial Cells

12:20 PM - 12:40 PM

Speaker: Rouzbeh Amini, Northeastern University

Mechanobiological Design and Evaluation of Hydroxyapatite Scaffolds for Bone Tissue Engineering

12:40 PM - 1:00 PM

Speaker: Elise Morgan, Boston University

4.10.2: Advances in Experimental and Modeling Studies of High Strain-Rate Mechanics

Location: STEW 311

Moderators: Mostafa Hassani

Understanding Projectile Perforation through Momentum Transfer: Universal Bounds Across Materials, Geometry, Scale, and Impact Velocities.

11:20 AM - 11:40 AM

Speaker: Ramathasan Thevamaran, University of Wisconsin-Madison

High-Strain-Rate Compressive Properties of Lightweight Granular Materials

11:40 AM - 12:00 PM

Speaker: Sinan Müftü, Northeastern University

Ultrahigh-Strain-Rate Impact Mechanics of 2D Nanopillar Metamaterials

12:00 PM - 12:20 PM

Speaker: Doa Kim, University of Massachusetts Amherst

Mechanical Hybridization and Strengthening Mechanisms of Bimetallic Nanolamellae Architectures at Ultrahigh-Strain

11:20 AM - 1:00 PM

Rates

12:20 PM - 12:40 PM

Speaker: Jae-Hwang Lee, University of Massachusetts

6.4.2: Soft Hydraulics: Low-Reynolds-number Hydrodynamics and Fluid-structure Interactions

Location: STEW 313

Moderators: Shrihari D. Pande

Elastoviscous Consequences on the Evolution of Flagellar Swimmers

11:20 AM - 11:40 AM

Speaker: Adnan Morshed, Tulane University

Microswimmer Orientation and Redistribution Dynamics in Oscillatory Shear Flows

11:40 AM - 12:00 PM

Speaker: Ashwin Ramachandran, Purdue University

Visual Filament Stretching Rheometry Using a Rotational Rheometer

12:00 PM - 12:20 PM

Speaker: Mohammad Tanver Hossain, University Of Illinois Urbana-champaign

Wave-Fluid Coupling in Confined Films: Resonance-Dissipation Control of Surface Acoustic Wave Attenuation

12:20 PM - 12:40 PM

Speaker: Amihai Horesh, Agriculture Research Organization

11:20 AM - 1:00 PM

1.3.2: Y. Huang Engineering Science Medalist Symposium in Honor of Dimitris C. Lagoudas: Smart and Multifunctional Materials

Location: STEW 314

Moderators: Gary Seidel

Dual Mesh Control Domain Method, a Novel Scheme for Fluid Structure Interactions and Multifield Models

11:20 AM - 11:40 AM

Speaker: Tanmaye Hablekar, Texas A&M University

Subsurface Flow Control

11:40 AM - 12:00 PM

Speaker: Daniel Inman, University of Michigan

Smart Materials for High-Power Sonic and Ultrasonic Transduction

12:00 PM - 12:20 PM

Speaker: Marcelo Dapino, The Ohio State University

Regenerative Manufacturing of Thermoset Polymeric Materials

12:20 PM - 12:40 PM

Speaker: Nancy Sottos, Materials Science and Engineering, Grainger College of Engineering, Beckman Institute, University of Illinois Urbana Champaign

Microstructure-Enabled Tunability in Whole-Cell Spirulina Bioplastics

12:40 PM - 1:00 PM

Speaker: Catherine Brinson, Duke University

11:20 AM - 1:00 PM

1.7.2: Structural Changes in Materials at Normal and Extreme Conditions: A Symposium in Honor of the 70th Birthday of Prof. Valery Levitas

Location: STEW 320

Moderators: Ashraf Bastawros

Stress-Driven Nanotendrils Growth

11:20 AM - 11:40 AM

Speaker: Peter Voorhees, California Institute of Technology

Multi-Scale Nature of an Amorphous/Crystalline Interface

11:40 AM - 12:00 PM

Speaker: Ashraf Bastawros, Iowa State University

A Phase-Field Investigation into the Interplay of Mechanical Stress and Irradiation Fluence on Latent Track Formation

12:00 PM - 12:20 PM

Speaker: Hamed Attariani, Wright State University

Mechanical Incompatibility in Grain Boundary Migration

12:20 PM - 12:40 PM

Speaker: Brandon Runnels, Iowa State University

Compositionally and Microstructurally Modulated Materials for Exceptional Functional and Mechanical Properties

12:40 PM - 1:00 PM

Speaker: Yunzhi Wang, The Ohio State University

11:20 AM - 1:00 PM

6.2.2: Dynamics, Instabilities, and Singularities in Free Surface Flows

Location: RAWLS 1011

Moderators: Osman Basaran, Hansol Wee

Patterns Initiated by Fluid Instabilities

11:20 AM - 11:40 AM

Speaker: Sidney Nagel, The University of Chicago

Dynamics of Rotating Drops

11:40 AM - 12:00 PM

Speaker: Shriram Joshi, Purdue University

Holey Sheet: Destabilizing Fluids under Extreme Stress

12:00 PM - 12:20 PM

Speaker: Michelle Driscoll, Northwestern University

Surfactant Effects in Escape from Pinch-Off during

Contraction of Liquid Sheets and 2D Drops

12:20 PM - 12:40 PM

Speaker: Ajay Harishankar Kumar, Purdue University

Retraction Dynamics of Surfactant-Covered Liquid Sheets with Surface Rheological Effects

12:40 PM - 1:00 PM

Speaker: Naresh K Dhanwani, Purdue University

11:20 AM - 1:00 PM

7.1.2: Scientific Machine Learning for Computational Mechanics

Location: RAWLS 1057

Moderators: Mina Karimi

Accelerating Multi-Time-Step (Mts) Coupling Methods for Generalized Runge-Kutta-Nyström (Grkn) Time-Integration Schemes Using Machine Learning

11:20 AM - 11:40 AM

Speaker: Arun Prakash, Purdue University

Automating Hexahedral Mesh Generation with Reinforcement Learning

11:40 AM - 12:00 PM

Speaker: Scott Holtshousen, University of Waterloo

Full-Field Uncertainty Quantification for Neural Operators at Single-Pass

12:00 PM - 12:20 PM

Speaker: Haoxuan Mu, Texas A&M University

A Hybrid Nonintrusive Nested Opinf-Deim Framework for Systems of Nonlinear Partial Differential Equations with Non-Polynomial Nonlinearities

12:20 PM - 12:40 PM

Speaker: Amin Atabaki Lachini, Lehigh University

Automating Surrogate Model Creation with AI Agents.

12:40 PM - 1:00 PM

Speaker: Maxwell Bolt, Purdue University

11:20 AM - 1:00 PM

7.12.2: Coupled Mechanics of Soft Solids

Location: RAWLS 1062

Moderators: Eric M. Stewart, Mrityunjay Kothari

Morphology-Property Interplay in Chemo-Mechanics of Ion-Intercalation Active Particles

11:20 AM - 11:40 AM

Speaker: Rongyue Lin, Northeastern University

Thermo-Chemo-Mechanical Coupling during Indentation of Thermochemical Energy Storage Materials

11:40 AM - 12:00 PM

Speaker: Srivatsa Bhat Kaudur, Georgia Institute of Technology

Numerical Model of Mechanical-Chemical Coupling between Lipid Bilayers and Membrane Associated Particles

12:00 PM - 12:20 PM

Speaker: Sam Silliman, Princeton University

Multiphysics Multiscale Modeling of Thermochemical Energy Storage: Coupling Reactor Bed Performance with Intragranular Mechanics

12:20 PM - 12:40 PM

Speaker: Satyam Bharti, Georgia Institute of Technology

11:20 AM - 1:00 PM

7.11.2: AI for Advanced Materials and Structures

Location: RAWLS 1071

Moderators: Marco Maurizi, Xiaoyu (Rayne) Zheng

Mechmetagpt: On-Demand Design of Fully 3D Mechanical Metamaterials

11:20 AM - 11:40 AM

Speaker: Shayan Baktash, University of Pittsburgh

Neural Objective Functions for Differentiable Topology Optimization of Metamaterials

11:40 AM - 12:00 PM

Speaker: Kyung-Mi Na, Georgia Institute of Technology

Aide: End-To-End Agentic AI for Inverse Structural Design of Stretchable Electronics

12:00 PM - 12:20 PM

Speaker: Lezhi Gu, The University of Texas at Austin

Graph-Structured Reinforcement Learning for Scientific Hypothesis Generation in Materials Design

12:20 PM - 12:40 PM

Speaker: Subhadeep Pal, Civil and Environmental Engineering, Massachusetts Institute of Technology

From Rules to Operators: An AI Framework for Interpretable and Accelerated Metamaterials Design

12:40 PM - 1:00 PM

Speaker: Catherine Brinson, Duke University

11:20 AM - 1:00 PM

6.1.2: Mechanics of Granular Media: Experiments, Theory, and Modeling

Location: RAWLS 1086

Moderators: Langdon Feltner

A Probabilistic Microstructure-Informed Internal-Variable Framework for Confined Granular Systems

11:20 AM - 11:40 AM

Speaker: Marcial Gonzalez, Purdue University

A Variational, Critical-State Theory for Friction of Highly-Confined Shearing Granular Layers

11:40 AM - 12:00 PM

Speaker: Mary Agajanian, California Institute of Technology

A Discrete Element Method for Modelling Powder Particle Behavior during Large Contact Deformations

12:00 PM - 12:20 PM

Speaker: Aryeetey Dalil Kasubhai Ashong, University of California

11:20 AM - 1:00 PM

5.3.2: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

Buckling of Constrained Columns

11:20 AM - 11:40 AM

Speaker: Lawrie Virgin, Duke University

Bending a Ridge

11:40 AM - 12:00 PM

Speaker: Andrew Croll, North Dakota State University

Sequential Buckling of Pressurized Barrelled Shells

12:00 PM - 12:20 PM

Speaker: Wenfeng Liu, Harvard University

Nonlinear Dynamics of a Mechanical Bistable Oscillator under Horizontal Base Excitation

12:20 PM - 12:40 PM

Speaker: Juwon Kim, Jeonbuk National University

11:20 AM - 1:00 PM

5.2.2: Instabilities and Nonlinear Mechanics Across Structural Scales

Location: KRAN G010

Moderators: Lucia Stein-Montalvo

Stabilization of Unstable Structures through Switching Dynamics

11:20 AM - 11:40 AM

Speaker: Paolo Celli, Stony Brook University

Temperature Effects on Viscoelastic Snap-Through Dynamics and Critical Slowing Down in Shallow Arches

11:40 AM - 12:00 PM

Speaker: Y. Jane Liu, Tennessee Tech University

Kirigami for Urban Canyon Ventilation and Shading

12:00 PM - 12:20 PM

Speaker: Vicky Chow, Northwestern University

11:20 AM - 1:00 PM

5.4.2: Complex Rheology in Polymeric Materials and Structures

Location: KRAN G012

Moderators: Chenghai Li

Hierarchical Materials through 3D Printing and Molecular Design

11:20 AM - 11:40 AM

Speaker: Emily Davidson, Princeton University

Brittle Adhesives for Tough Tissue Adhesion and Prosthesis

11:40 AM - 12:00 PM

Speaker: Jiatai Sun, Worcester Polytechnic Institute

Variationally Consistent Data Embedding in Stokes Flow

12:00 PM - 12:20 PM

Speaker: Eyzid Hadi, University of Illinois at Urbana Champaign

Modeling Non-Ideal Elastomeric Gels

12:20 PM - 12:40 PM

Speaker: Wei Hong, Eastern Institute of Technology

11:20 AM - 1:00 PM

5.5.2: Mechanics of Failure in Network Materials

Location: KRAN G018

Moderators: Chase Hartquist

Tough Polymer Gels Reinforced by Strain-Induced Crystallization

11:20 AM - 11:40 AM

Speaker: Koichi Mayumi, The University of Tokyo

Elastic Polymer Networks of Exceptional Strength by Deconcentrating Tension

11:40 AM - 12:00 PM

11:20 AM - 1:00 PM

12:30 PM - 2:00 PM

2:00 PM - 3:00 PM

3:00 PM - 3:30 PM

3:30 PM - 5:30 PM

Speaker: Yu Zhou, Harvard University

Nonmonotonic Toughness Controlled by Ring-Chain Friction in Slide-Ring Polymer Networks

12:00 PM - 12:20 PM

Speaker: Zihan Tang, University of Wisconsin-Madison

Molecular Network Design for Tough Micellar Networks

12:20 PM - 12:40 PM

Speaker: Gourav Kumbhojkar, Northwestern University

Tuning Mechanical Reinforcement in Polymer Grafted Nanoparticle Composites via Loop Graft Architecture

12:40 PM - 1:00 PM

Speaker: Sri Maddukuri, Northwestern University

5.7.2: Mechanics of Damage, Fracture and Friction in Materials Across Scales

Location: KRAN G020

Moderators: Evgenii kanin

Stick-Slip Friction on 3D-Printed Polymeric Surfaces: Linear Stability, Bifurcation, and Numerical Analyses

11:20 AM - 11:40 AM

Speaker: Yang Wan, Northeastern University

Rate-Dependent Fracture in Adhesives: Insights from Tension-Peel Experiment

11:40 AM - 12:00 PM

Speaker: Dibya Jyoti Basu, Purdue University

Fracture Nucleation in Slender Structures: Role of Competing Length Scales

12:00 PM - 12:20 PM

Speaker: Aryan Sinha, Institute for Building Materials

Study on a Fast Nde Method to Calibrate Mode I Fracture Toughness for Pipeline Materials

12:20 PM - 12:40 PM

Speaker: Yuanli Bai, University of Central Florida

Listening to Fracture: Extended Criticality and Avalanche Precursors in Disordered Solids

12:40 PM - 1:00 PM

Speaker: Hudson Borja Da Rocha, University of Minnesota

LUNCH PMU Ground Floor

Plenary Session

Location: Loeb Playhouse, Stewart Center

Speaker: Dimitris C. Lagoudas (Y. Huang Engineering Science Medalist), Moderator: Gary Seidel

BREAK | Hospitality Rooms: STEW 302/306 & Rawls Atrium

1.1.3: William Prager Medal Symposium in honor of Samuel Forest

Location: STEW 202

Moderators: Vladislav YASTREBOV

Modeling Aspects of Arteries Considering Collagen Cross-Linking and the Peculiarity of the Negative Poynting Effect

3:30 PM - 3:50 PM

Speaker: Gerhard A. Holzapfel, Graz University of Technology

Bridging Scales in Micromechanics Damage Modeling with Field Projection and Machine Learning

3:50 PM - 4:10 PM

Speaker: Huck Beng Chew, University of Illinois Urbana-Champaign

Percolation Based Hunny Theory of Ductile Fracture

4:10 PM - 4:30 PM

Speaker: A. A. Benzerga, Aerospace Engineering, Texas A&M University

3:30 PM - 5:30 PM

3:30 PM - 5:30 PM

3:30 PM - 5:30 PM

Towards a New Framework for the Mechanics of Nonequilibrium Continua

4:30 PM - 4:50 PM

Speaker: Youping Chen, University of Florida

Size Effect in Elasto-Plastic Contact of Rough Surfaces

4:50 PM - 5:10 PM

Speaker: Vladislav Yastrebov, CNRS, Mines Paris - PSL

Why Do Some People Hear Music Better Than Others?

5:10 PM - 5:30 PM

Speaker: Pradeep Sharma, University of Houston

1.5.3: SES Student and Postdoctoral Award Symposium

Location: STEW 204

Moderators: Baoxing Xu

Enduring Mechanical Memory in an Elastically Recoverable Foam Material

3:30 PM - 3:50 PM

Speaker: Abhishek Gupta, Brown University

A Braided Hierarchical Lce Fiber Bundle for Underwater Actuation

3:50 PM - 4:10 PM

Speaker: Fangjie Qi, North Carolina State University

Static and Dynamic Response of Scale-Rich Network-Inspired Architected Materials

4:10 PM - 4:30 PM

Speaker: Andrew Chen, Massachusetts Institute of Technology

Multi-Functional Programmable Shape Morphing Architectures

4:30 PM - 4:50 PM

Speaker: Yue Wang, University of Houston

High-Performance Carbon Black Reinforced Natural Rubber by Preserving Long Chains

4:50 PM - 5:10 PM

Speaker: Chenghai Li, Harvard University

2.9.3: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Zhenhua Tian

Flexible and Wearable Acoustofluidic Lab-On-Chips

3:30 PM - 3:50 PM

Speaker: Richard Yongqing Fu, Northumbria University at Newcastle

Acoustofluidic Bioassembly for Tissue Fabrication

3:50 PM - 4:10 PM

Speaker: Hyungsuk Lee, Yonsei University

Ultrasound Radiation Enhanced by the Purcell Effect of Phase-Transitioning Nanodroplets

4:10 PM - 4:30 PM

Speaker: Chengzhi Shi, University of Michigan

Brain Organoid Computing

4:30 PM - 4:50 PM

Speaker: Feng Guo, Indiana University Bloomington

Symmetry-Breaking Strategies for Microparticle Manipulation

4:50 PM - 5:10 PM

Speaker: Sascha Hilgenfeldt, University of Illinois Urbana-Champaign

Nano-Drug Delivery Systems Driven by Ultrasonic Actuators

5:10 PM - 5:30 PM

Speaker: Yuta Kurashina, Tokyo University of Agriculture and Technology

2.3.3: Structure and Mechanics of Living and Bioinspired Materials

Location: STEW 214A

Moderators: Jingjie Yeo

Engineered Living Structural Materials

3:30 PM - 3:50 PM

Speaker: Avinash Manjula-Basavanna, Northeastern University

3D-Printed Microbial Hydrogels for Spatially Directed Biomineralization

3:50 PM - 4:10 PM

Speaker: Isaak Thornton, Montana State University

Controlling Biomineralization Pathways in Microbially Induced Calcium Carbonate Precipitation for Living Construction Materials

4:10 PM - 4:30 PM

Speaker: Yaghoob {amir} Farnam, Drexel University

Elephant-Skin-Inspired Porous Cementitious Tiles with Programmable Crack Networks for Passive Cooling

4:30 PM - 4:50 PM

Speaker: Qingya Huang, Syracuse University

Bacteria Architecture in Living Porous Materials

4:50 PM - 5:10 PM

Speaker: Jingjie Yeo, Cornell University

3:30 PM - 5:30 PM

2.5.3: Cell Mechanics and Mechanobiology

Location: STEW 214B

Moderators: Harshavardhan Kalathur, Shiva Rudraraju

Cell-Matrix Interaction within Living Composites

3:30 PM - 3:50 PM

Speaker: Xinyue Liu, Michigan State University

Aging-Associated Ecm Softening Enhances Fibroblast Contractility but Impairs Wound Closure

3:50 PM - 4:10 PM

Speaker: Mohammad Jafari, New Jersey Institute of Technology

Poroelectric Mechanical Loading Disrupts Cytoskeletal Symmetry in 3D Architected Scaffolds

4:10 PM - 4:30 PM

Speaker: Ottman Tertuliano, University of Pennsylvania

Harnessing Disorder for Programmable Nonlinear, Anisotropic Mechanics in Kirigami Metamaterials

4:30 PM - 4:50 PM

Speaker: Haomin Yu, Washington University in St. Louis

Biaxial Alternating Electric Field Control of Fibroblast Polarization for Anti-Fibrosis Therapy

4:50 PM - 5:10 PM

Speaker: Naiyan Wu, Washington University in St. Louis

3:30 PM - 5:30 PM

4.3.3: Leveraging Entanglement to Enhance the Multi-physical Properties of Networked Materials Across Scales

Location: STEW 214C

Moderators: Asaf Dana

Modeling Entangled Particles as Network Materials

3:30 PM - 4:10 PM

Speaker: Francois Barthelat, University of Colorado at Boulder

Living Braided Nematics

4:10 PM - 4:30 PM

Speaker: Vishal Patil, University of California San Diego

From Crystals to Weaves: A Formal Framework for Volumetric Weaving with Wigner-Seitz Cells

4:30 PM - 4:50 PM

Speaker: Tolga Yildiz, Texas A&M University

Shape-Morphing Hydrogel Ribbons for Injectable Hemostasis

4:50 PM - 5:10 PM

Speaker: Asaf Dana, Texas A&M University

Topological and Spatial Grading of Intertwined Architected

3:30 PM - 5:30 PM

Materials

5:10 PM - 5:30 PM

Speaker: Elias Pescialli, ETH Zurich

3.4.3: Mechanics of Materials and Structures for In-Space Manufacturing and Deployable Structures

Location: STEW 214D

Moderators: Xin Ning

A Unified Framework for Kinematic and Dynamic Simulation of Rigid-Foldable Structures

3:30 PM - 3:50 PM

Speaker: Dongwook Kwak, Seoul National University

Autonomous Wind-Propelled Icosahedron Sensor System for Environmental Monitoring

3:50 PM - 4:10 PM

Speaker: Sangwoo Suk, University of Illinois Urbana-Champaign

Probabilistic Sizing of Delamination Damage in Composite Laminates from Active Thermography and Machine Learning

4:10 PM - 4:30 PM

Speaker: Mumen Hamadneh, University of Illinois Urbana-Champaign

Deployed Dynamics of Bending-Stiff, Single Degree-Of-Freedom Space Structures Combining Origami and Deployable Shells

4:30 PM - 4:50 PM

Speaker: Jabez Abayneh, Cornell University

Buckling-Enabled Deployable Propeller Blades

4:50 PM - 5:10 PM

Speaker: Kawai Kwok, Purdue University

Embedding Electronics in 3D Printed Composites Using Integrated Heaters for Space Applications

5:10 PM - 5:30 PM

Speaker: Kuruppu Achchige Lasith Hansaka Kuruppu, University of Illinois at Urbana-Champaign

3:30 PM - 5:30 PM

3.5.3: Direct Ink Writing: From Process Mechanics and Control to Microstructure and Architected Materials

Location: STEW 218A

Moderators: Jordan Raney

Direct Ink Writing and Closed-Loop Recycling of Creep-Resistant Vitrimer Liquid Crystal Elastomers

3:30 PM - 3:50 PM

Speaker: Jennifer Xiao, Georgia Institute of Technology

Optimized Director Fields to Manufacturable Toolpaths: Direct Ink Writing of Liquid Crystal Elastomers with Continuous Director Orientations

3:50 PM - 4:10 PM

Speaker: Asad Ahmed, University of Illinois at Urbana Champaign

3:30 PM - 5:30 PM

3.8.3: Programmable Morphing Matter: Bridging Bioinspiration, Mechanics, and Autonomous Design

Location: STEW 218B

Moderators: Liwei Wang

Two-Dimensional Skeletal Muscle Actuators with Improved Longevity and Multi-Dof Locomotion

3:30 PM - 3:50 PM

Speaker: Maheera Bawa, Massachusetts Institute of Technology

Design and Control of Multifunctional Responses in Magnetoactive Soft Systems

3:50 PM - 4:10 PM

Speaker: Rahul Dev Kundu, University of Illinois Urbana-Champaign

Growing Metamaterials with Spatially Programmable Local Volume Fractions

3:30 PM - 5:30 PM

3:30 PM - 5:30 PM

3:30 PM - 5:30 PM

4:10 PM - 4:30 PM

Speaker: Lei An, University of Illinois Urbana-Champaign

Geometric Encoding for Reprogrammable Tendon-Driven Morphing of Developable Structures

4:30 PM - 4:50 PM

Speaker: Caizhi Zhou, North Carolina State University

Temperature-Driven Locking of Stable Configurations in Dome-Patterned Metastructures

4:50 PM - 5:10 PM

Speaker: Khushal Goparaju, Purdue University

4.8.3: High Entropy Alloys and Metallic Glasses: Taming Order in Disorder

Location: STEW 218C

Moderators: Yue Fan

Heterostructured Alloys

3:30 PM - 3:50 PM

Speaker: Amit Misra, University of Michigan

Micromechanical Behavior of Medium and High Entropy Alloys and Ceramics

3:50 PM - 4:10 PM

Speaker: Xinghang Zhang, Purdue University

Persistent Homology Reveals a Topological Stability

Coordinate in Metallic Glasses

4:10 PM - 4:30 PM

Speaker: Muchen Wang, University of Michigan

Role of Deformation Mechanisms on Plastic Recovery in Particle-Strengthened Fcc Superalloys

4:30 PM - 4:50 PM

Speaker: Fariha Haq, Purdue University

4.11.3: Mechanics of Energetic Materials

Location: STEW 218D

Moderators: Monique McClain

A Peridynamic Theory of Fracture in Large Deformation Viscoelastic Solids

3:30 PM - 3:50 PM

Speaker: Emma Boyd, Air Force Research Laboratory

The Effect of Partially Curing Photocurable Molding Powders on Mechanical Properties of Polymer Bonded Explosives

3:50 PM - 4:10 PM

Speaker: Ismar Chew, Purdue

Coupled Solid-Fluid Mechanical Response during Propellant Deflagration

4:10 PM - 4:30 PM

Speaker: Caleb Munger, Iowa State University

Mechanically-Induced Electrical-Chemical Responses of Polymer-Metal Composites

4:30 PM - 4:50 PM

Speaker: Daniel Olsen, Georgia Institute of Technology

Chemically Reacting Flows Coupled with Phase Field Driven Boundaries for Solid Propellant Combustion

4:50 PM - 5:10 PM

Speaker: Eric Sandall, Iowa State University

3.7.3: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Wanliang Shan

Realtime Compliance and Position Control of a Hyper-Redundant Soft Robotic Arm

3:30 PM - 3:50 PM

3:30 PM - 5:30 PM

Speaker: Daniel Bruder, University of Michigan
Soft Spiral Octopus Tentacles Driven by Concentric Coiled Artificial Muscles
3:50 PM - 4:10 PM
Speaker: Liuyang Cheng, University of Illinois at Urbana-Champaign
Linking Exteroception and Proprioception through Improved Contact Modeling for Soft Growing Robots
4:10 PM - 4:30 PM
Speaker: Francesco Fuentes, Purdue University
Mechanical Intelligence via Multistability for Embodied Control in Soft Robots
4:30 PM - 4:50 PM
Speaker: Andres Arrieta, Purdue University
Advanced Manufacturing of Bioelectronics and Ingestible Systems
4:50 PM - 5:10 PM
Speaker: Yong Lin Kong, Rice University
Origami-Inspired Fluidic Logic Devices for Mechanical Intelligence in Soft Robots
5:10 PM - 5:30 PM
Speaker: Sicheng Wang, Purdue University

4.2.3: Advances on the Mechanics of Architected Materials

Location: STEW 279
Moderators: Carlos M. Portela

Millimeter-Scale Multi-Million Cell Nanoarchitected Mechanical Metamaterials
3:30 PM - 3:50 PM
Speaker: Peter Serles, California Institute of Technology
Dynamic Deformation Mechanisms of Microscale Mechanical Metamaterials
3:50 PM - 4:10 PM
Speaker: Carlos Portela, MIT
Origins of Size-Dependent Toughness in Nanocellular Polymer Foams
4:10 PM - 4:30 PM
Speaker: Kush Dwivedi, University of Washington
Architected Core-Shell Vacant Foams for Tunable Energy Absorption under Multiaxial Loading
4:30 PM - 4:50 PM
Speaker: Lasantha Weerasekara, University of Wisconsin–Madison
Temperature-Programmable Failure in Double-Network Metamaterials
4:50 PM - 5:10 PM
Speaker: Ling Xu, Massachusetts Institute of Technology

3:30 PM - 5:30 PM

2.6.3: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310
Moderators: Farid Alisafaei, Guy Genin

Leveraging Deformation Heterogeneity for Multiscale Mechanical Inference
3:30 PM - 3:50 PM
Speaker: Callan Luetkemeyer, University of Illinois at Urbana-Champaign
Multiscale Mechanics of Programmable Protein Hydrogels: Bridging Atomistic Interactions to Network-Level Toughness
3:50 PM - 4:10 PM
Speaker: Hanxun Jin, University of Cincinnati
Mechanics of Nonfibrotic Adhesive Interfaces
4:10 PM - 4:30 PM
Speaker: Bastien Aymon, Massachusetts Institute of Technology

3:30 PM - 5:30 PM

From Load-Bearing to Failure: Multiscale Ecm Remodeling in Aging

4:30 PM - 4:50 PM

Speaker: Yanhang {katherine} Zhang, Boston University

Image-Based Mechanoprofiing of Blood Clots for Stroke Treatment

4:50 PM - 5:10 PM

Speaker: Manuel Rausch, The University of Texas at Austin

4.10.3: Advances in Experimental and Modeling Studies of High Strain-Rate Mechanics

Location: STEW 311

Moderators: Sinan Müftü

Modeling Phase Transformation Kinetics for Metals

3:30 PM - 3:50 PM

Speaker: Abigail Hunter, Los Alamos National Laboratory

Unraveling Experimental Anomalies in the Shock Response of Boron Carbide Using a Machine Learning Interatomic Potential

3:50 PM - 4:10 PM

Speaker: Douglas Spearot, University of Florida

A Machine Learning Informed Continuum Damage Model for Void Nucleation and Growth in Bcc Metal Microstructures under Shock Loading.

4:10 PM - 4:30 PM

Speaker: Abhijiith Thoopul Anantharanga, Iowa State University

Characterizing the Impact Response of Crconl Alloys through Experiments, Simulations, and Data Assimilation

4:30 PM - 4:50 PM

Speaker: Rong Jin, University of Kentucky

Thermomechanically Coupled Modeling of Elastocaloric Response in Submicron Niti Thin Films under High Strain Rates

4:50 PM - 5:10 PM

Speaker: Jae-Hoon Choi, Jeonbuk National University

3:30 PM - 5:30 PM

6.4.3: Soft Hydraulics: Low-Reynolds-number Hydrodynamics and Fluid-structure Interactions

Location: STEW 313

Moderators: Ivan C. Christov

Fluidic Hysterons and Memory in Soft Hydraulic Networks

3:30 PM - 3:50 PM

Speaker: Amir Pahlavan, Yale University

Chemically Modulated Fluid-Structure Interaction during Neutrophil Extravasation Across the Blood-Brain Barrier

3:50 PM - 4:10 PM

Speaker: Binan Gu, Worcester Polytechnic Institute

Flow Rate–Pressure Drop Relations for Non-Newtonian Fluids in Three-Dimensional Deformable Configurations

4:10 PM - 4:30 PM

Speaker: Jie Feng, University of Illinois Urbana–Champaign

Flow Enhancement of Oscillatory Flow Due to Shear-Thinning and Channel Deformation

4:30 PM - 4:50 PM

Speaker: Shrihari D. Pande, Purdue University

Elastoinertial Rectification of Oscillatory Flows in Weakly Deformable Rectangular Channels via the Lorentz Reciprocal Theorem

4:50 PM - 5:10 PM

Speaker: Ivan C. Christov, Purdue University

Elastic Vesicle Transport and Flow Resistance in Deformable Stenosed Arteries: A Soft Hydraulics

3:30 PM - 5:30 PM

Perspective

5:10 PM - 5:30 PM

Speaker: Abhishek Raj, Indian Institute of Technology Patna

1.3.3: Y. Huang Engineering Science Medalist Symposium in Honor of Dimitris C. Lagoudas: Smart and Multifunctional Materials

Location: STEW 314

Moderators: Darren Hartl

Mechanics of Quantum Materials

3:30 PM - 3:50 PM

Speaker: Pradeep Sharma, University of Houston

Toward Predictive Atomistic Modeling of Magnetoelastic Interactions in Nanoscale Systems

3:50 PM - 4:10 PM

Speaker: Malcom Jackson, MAE Dept, UCLA

Electrochemically Active Optical Modulators from Hybrid Nanostructured Soft Matter

4:10 PM - 4:30 PM

Speaker: Siddharth Doshi, Stanford University

Multiscale Modeling of Reactive Mixtures: Variational Stabilization of Coupled Thermo-Chemo-Mechanical Systems

4:30 PM - 4:50 PM

Speaker: Arif Masud, University of Illinois Urbana-Champaign

From the Modeling of Multifunctional Materials to Continuum Chemo-Mechanics

4:50 PM - 5:10 PM

Speaker: Bjoern Kiefer, TU Bergakademie Freiberg

3:30 PM - 5:30 PM

1.7.3: Structural Changes in Materials at Normal and Extreme Conditions: A Symposium in Honor of the 70th Birthday of Prof. Valery Levitas

Location: STEW 320

Moderators: Ashraf Bastawros

Metastability in Alloys for Extreme Environments

3:30 PM - 3:50 PM

Speaker: Kiran Solanki, School for the Engineering of Matter

Stress-Tuned Interface Compatibility in Shape-Memory Materials

3:50 PM - 4:10 PM

Speaker: Eliana M. Feygin, Massachusetts Institute of Technology

A Data-Driven Prediction of High-Temperature Solid Particle Impact Regimes Using Machine Learning

4:10 PM - 4:30 PM

Speaker: Wayne Chen, Iowa State University

A Unified Micromechanical Approach to Phase Transformation and Trip in Metals

4:30 PM - 4:50 PM

Speaker: Istemi Ozsoy, Embry-Riddle Aeronautical University

Thermo-Mechanics of Adiabatic Shear Banding in Polycrystalline Metallic Materials

4:50 PM - 5:10 PM

Speaker: Curt Bronkhorst, University of Wisconsin - Madison

Femtosecond Laser-Induced Damage in Nanolaminate Coatings under Extreme Conditions

5:10 PM - 5:30 PM

Speaker: Alok Sutradhar, The Ohio State University

3:30 PM - 5:30 PM

6.2.3: Dynamics, Instabilities, and Singularities in Free Surface Flows

Location: RAWLS 1011

Moderators: Osman Basaran, Hansol Wee

A Fast Mesh-Free Algorithm for Two-Phase Flow with Soluble Surfactant

3:30 PM - 3:50 PM

Speaker: Michael Booty, New Jersey Institute of Technology

Singularities in Soft Matter Systems

3:50 PM - 4:10 PM

Speaker: Vatsal Sanjay, Durham University

Drop Impact Onto Liquid Pools.

4:10 PM - 4:30 PM

Speaker: Alfonso A. Castrejon-Pita, University of Oxford

High-Fidelity Simulation of Elastocapillary Systems

4:30 PM - 4:50 PM

Speaker: Hector Gomez, Purdue University

Molecular Simulation of the Initial Stages of Drop Coalescence

4:50 PM - 5:10 PM

Speaker: Aaditya Joshi, University of Michigan

Manipulating Droplet Jumping Behaviors on Hot Microstructured Surfaces - from Vibration to Explosion

5:10 PM - 5:30 PM

Speaker: Wenge Huang, Virginia Tech

3:30 PM - 5:30 PM

7.1.3: Scientific Machine Learning for Computational Mechanics

Location: RAWLS 1057

Moderators: Yang Xu

Multiscale Hypersonic Boundary Layer Reconstruction via Spectral Binning and Wall-Normal Subdomain Diffusion Model

3:30 PM - 3:50 PM

Speaker: Hojin Kim, Purdue University

Toward General-Purpose Neural Operators for AI Physics Engines

3:50 PM - 4:10 PM

Speaker: Paolo Secchi, The Italian Institute of Artificial Intelligence (IAI)

A Transfinite Physics-Informed Neural Network Framework for Green's Function Computations on Convex Polygonal Domains

4:10 PM - 4:30 PM

Speaker: N. Sukumar, UC Davis

Probabilistic Prediction Using Machine Learning Models under Coupled Uncertainty

4:30 PM - 4:50 PM

Speaker: Xiaoping Du, Purdue University

Deep Learning of Solver-Aware Turbulence Closures from Nudged Les Dynamics

4:50 PM - 5:10 PM

Speaker: Ashwin Suriyanarayanan, Purdue University

Finite Element Eigenfunction Networks for Pdes on Complex Geometries

5:10 PM - 5:30 PM

Speaker: Shiyuan Li, Duke University

3:30 PM - 5:30 PM

7.12.3: Coupled Mechanics of Soft Solids

Location: RAWLS 1062

Moderators: Keven Alkhoury, Mrityunjay Kothari

Continuum Modeling of Thermo-Electro-Mechanics of Charge Injection at Crack Tips

3:30 PM - 3:50 PM

Speaker: Scott Grutzik, Sandia National Laboratories

Coupled Linear Electro-Thermo-Elasticity: Numerical

3:30 PM - 5:30 PM

**Implementation in Fenicsx and Application to Modeling
Electro-Thermal Micro-Actuators**

3:50 PM - 4:10 PM

Speaker: Evan Fisher, University of Cincinnati

**A Thermo-Mechanically Coupled Phase-Field Framework for
Freezing-Induced Damage in Soft Materials**

4:10 PM - 4:30 PM

Speaker: Mrityunjay Kothari, University of New Hampshire

**Thermo-Poromechanical Modeling of Vaporization and Pore-
Pressure Buildup in Soft Materials under Heating**

4:30 PM - 4:50 PM

Speaker: Yida Zhang, University of Colorado Boulder

**Thermal Recovery of the Mullins Effect in Filled Rubbers:
Experiments and Modeling**

4:50 PM - 5:10 PM

Speaker: Mark Nyevgen, New Jersey Institute of Technology

**Determining Safe Temperature Limits for Accelerated Aging
of Additively Manufactured Polymers for Undersea
Applications**

5:10 PM - 5:30 PM

Speaker: Kevin Logiudice, Brown University

7.11.3: AI for Advanced Materials and Structures

Location: RAWLS 1071

Moderators: Emma Lejeune

**Augmented Piezoelectricity through AI-Designed
Metamaterials**

3:30 PM - 3:50 PM

Speaker: Anish Satpati, UC Berkeley

**AI-Programmed Piezoelectric Robotic Matter: From
Architected Actuation to Distributed Adaptive Behavior**

3:50 PM - 4:10 PM

Speaker: Marco Maurizi, The Italian Institute of Artificial Intelligence (IIAI)

**Evolutionary Genai-Explored Metamaterial Spinal Fusion
Cages: Design and in Vivo Evaluation**

4:10 PM - 4:30 PM

Speaker: Jianzhe Luo, University of Pittsburgh

**Agentic End-To-End De Novo Protein Design for Tailored
Dynamics Using a Language Diffusion Model**

4:30 PM - 4:50 PM

Speaker: Bo Ni, Carnegie Mellon University

An Intelligent Device for Rapid Reversal of Opioid Overdose

4:50 PM - 5:10 PM

Speaker: Vivian Niu, Indiana University

3:30 PM - 5:30 PM

**6.1.3: Mechanics of Granular Media: Experiments, Theory,
and Modeling**

Location: RAWLS 1086

Moderators: David Henann

**A Surface-Roughness-Based Discrete Element Method for
Modeling Granular Mechanics Problems**

3:30 PM - 3:50 PM

Speaker: Xiwei Pan, Princeton University

**Scaling Laws in Granular Flows: An Earthbound Method to
Predict Micro-Gravity Behaviors**

3:50 PM - 4:10 PM

Speaker: Ken Kamrin, UC Berkeley

**Quadrupolar Non-Affine Displacement Fields in Jammed
Repulsive Disk Packings**

4:10 PM - 4:30 PM

Speaker: Evan Willmarth, Yale University

Percolation of Fine Particles in a Sheared Bed

4:30 PM - 4:50 PM

3:30 PM - 5:30 PM

Speaker: Jizhi Zhang, Northwestern University
Predicting Ensemble Flow and Packing from Binary Contact Curvature Distributions of Irregular Particles
4:50 PM - 5:10 PM
Speaker: Rajeshree Varma, Purdue University
Bridging Two- and Three- Dimensional Powder Morphology via Contact Curvature Characterization.
5:10 PM - 5:30 PM
Speaker: Langdon Feltner, University of North Carolina at Charlotte

5.3.3: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

Tuning Nonlinearity via Linear Waves: A Pathway to Electronics-Free Systems

3:30 PM - 3:50 PM

Speaker: Bolei Deng, Georgia Institute of Technology

Bistable Shape-Morphing Kirigami Structures

3:50 PM - 4:10 PM

Speaker: Xiaoyuan Ying, University of Edinburgh

Tri-Wob: A Multistable Origami Structure with Stiffness and Rotational Bistability Programming

4:10 PM - 4:30 PM

Speaker: Lingchen Kong, McGill University

Hyper-Yoshimura --- How a Small Tweak in the Classical Origami Design Rule Can Unleash Meta-Stability for Deployable Architectures and Robotics

4:30 PM - 4:50 PM

Speaker: Ziyang Zhou, Virginia Tech, VA

Nonlinear Mechanics and Predicable Bifurcation of Generalized Kresling Origami Chains

4:50 PM - 5:10 PM

Speaker: Songlin Yue, The University of Edinburgh

3:30 PM - 5:30 PM

5.2.3: Instabilities and Nonlinear Mechanics Across Structural Scales

Location: KRAN G010

Moderators: Fani Derveni

Probabilistic Buckling and Controlled Fabrication of Imperfection-Sensitive Thin Shells

3:30 PM - 3:50 PM

Speaker: Fani Derveni, Cornell University

Mechanistic Modeling of Safety Factors for Buckling of Pressurized Spherical Shells with Random Localized Defects

3:50 PM - 4:10 PM

Speaker: Jia-Liang Le, University of Minnesota

Emergent Mesoscales in the Nonlinear Kinematics of Thin-Walled Knurled Cylinders

4:10 PM - 4:30 PM

Speaker: Hussein Nassar, University of Houston

From Chaos to Function: Understanding and Harnessing Geometric Imperfections in Thin-Shell Buckling

4:30 PM - 4:50 PM

Speaker: Azadeh Fathi, Cornell University

Uncovering the Link between Shell Imperfection Sensitivity and Additive Manufacturing Defects

4:50 PM - 5:10 PM

Speaker: Sage Cooley, Cornell University

3:30 PM - 5:30 PM

5.4.3: Complex Rheology in Polymeric Materials and

Structures

Location: KRAN G012

Moderators: Abigail Plummer

Crack Propagation in Swelling Gels

3:30 PM - 3:50 PM

Speaker: Abigail Plummer, Boston University

Polymer-Bridging Mucosal Adhesion by Electrophoresis, Ionic Complexation, and Entanglement

3:50 PM - 4:10 PM

Speaker: Kun-Hao Yu, Syracuse University

Tissue-Like Soft Biosensors with Benchmark Sensing Interfaces for in Vivo Molecular Monitoring

4:10 PM - 4:30 PM

Speaker: Yichao Zhao, MIT

3:30 PM - 5:30 PM

5.5.3: Mechanics of Failure in Network Materials

Location: KRAN G018

Moderators: Shaoting Lin

Embrittlement of Long-Chain Polymer Networks at High Solvent Viscosity

3:30 PM - 3:50 PM

Speaker: Junsoo Kim, Northwestern University

Post-Synthetic Control of Topology in a Living Polymer Network

3:50 PM - 4:10 PM

Speaker: Taewon Kang, Northwestern University

Multiple Dissipation Mechanisms in the Fracture of Soft Materials

4:10 PM - 4:30 PM

Speaker: Weixuan Liu, University of California

Cohesion, Precursors, and Cavitation in Soft Polymer Networks

4:30 PM - 5:10 PM

Speaker: Franck Vernerey, Mechanical Engineering, University of Colorado Boulder

3:30 PM - 5:30 PM

5.7.3: Mechanics of Damage, Fracture and Friction in Materials Across Scales

Location: KRAN G020

Moderators: Ahmed Elbanna

Polymer Glass Resists Fatigue Crack Growth by Deconcentrating Stress

3:30 PM - 4:10 PM

Speaker: Christine Ahn, Harvard University

Breaking a Generalized Mooney-Rivlin Material: A Tale of a Crack under Nonlinearities

4:10 PM - 4:30 PM

Speaker: Raúl Lazo-Molina, ETH Zürich

Computational Modeling of Mechanophore-Modified Polymers during High Strain Rate Loading

4:30 PM - 4:50 PM

Speaker: Marisol Koslowski, West Lafayette, IN 47906

Exploring the Role of Jerk in Soft Material Damage

4:50 PM - 5:10 PM

Speaker: Collin Desroberts, Massachusetts Institute of Technology

Uncovering the Molecular Origin of Polymer Network Strength

5:10 PM - 5:30 PM

Speaker: Jinyue Dai, Northwestern University

5:30 PM - 6:00 PM

6:00 PM - 7:30PM

FREE TIME

RECEPTION AND POSTERS – PMU Main Floor, Ballrooms

SES Annual Technical Meeting 2026

Poster Presentations

Title	Presenting Author	Institute Affiliation
Damage Prediction of 2-Terminal Perovskite-Silicon Tandem Devices Using Cohesive Zone Modelling	Abhijit Prekash	Arizona State University
Cationic and Anionic Ion Substitution Effect on Mechanical Properties of Biomimetic Apatites	Abigail Eaton	Air Force Institute of Technology
Dual Actuation Improves Identifiability of Transversely Isotropic Material Properties from Magnetic Resonance Elastography Using Optimized Virtual Fields Method	Adam Quin	University of Illinois Urbana-Champaign
Influence of Non-Ideal Geometry on the Dynamic Response of a Two-Dimensional Acoustic Cavity	Akshay Deolia	Purdue University
A Lattice-Continuum Link in Molecular Crystals	Ananya Renuka Balakrishna	University of California Santa Barbara
Static and Dynamic Response of Scale-Rich Network-Inspired Architected Materials	Andrew Chen	Massachusetts Institute of Technology
DNA Origami Unlocks Topological Mechanical Defects at the Nanoscale	Anirudh Madhvacharyula	Purdue University
Physical and Neural Reservoirs for Soft Arm Control	Apoorva Khairnar	Virginia Tech
Flow-Driven Anisotropy in Collagen Gels Tuned by Microchannel Geometry	Aryan Chandra	University of Illinois Urbana-Champaign
Quasi-Static and Dynamic Crashworthiness of Foam-Filled Fdm-Printed Polymer Tubes	Ava Yarandi	University of Illinois at Urbana-Champaign
Mechanics of Nonfibrotic Adhesive Interfaces	Bastien Aymon	Massachusetts Institute of Technology
Ultrasound-Incorporated Tracking of Octopus Arm 3D Kinematics	Bokun Zheng	Virginia Tech
Achieving Extreme Wear Resistance in a Multi-Principal Component Alloy by Stress-Induced Catalysis	Bunty Tomar	Oklahoma State University
Fabrication of Stingray Inspired Metamaterials	Cat Arase	Massachusetts Institute of Technology
Anisotropic Indentation Microscopy (Aim) Resolves Differences in Endometrial Collagen Alignment	Catalina S. Bastias	University of Illinois Urbana-Champaign
In-Petri-Dish Acoustic Vortex Tweezers Enable Rotational Manipulation of Zebrafish	Chongpeng Qiu	VIRGINIA POLYTECHNIC INSTITUTE
Phenotyping Tumor Cell Adhesion Using Acoustofluidics	Chunhui Tian	Indiana University Bloomington
Experimental Investigation of Geometry-Dependent Poisson's Ratio in Architected Origami Metamaterials	Drish Shah	Purdue University
Miniaturized Geometry-Controlled Sharp-Edge Acoustofluidic Pumps for Nanoliter Flow Control and Microfluidic Bioassays	Erfan Eskandari	University of Rhode Island
Toward a Modular Framework for Soft Growing Robots	Eugenio Frias-Miranda	Purdue University
The Emergence of End Effects in Hyperelastic Solids under Large Deformation	Fahim Dorsey	University of Illinois Urbana-Champaign
Acoustic Force Spectroscopy for Probing Mechanical Properties of Biomolecules	Floor Loozen	VU Amsterdam

Title	Presenting Author	Institute Affiliation
Electrically Accelerated Mechanochemical Film Formation by a Phosphonium Phosphate Ionic Liquid: An In-Situ Chemical Kinetics Investigation at Lubricated Contacts	Foyez Ahmad	Oklahoma State University
Acoustic Virtual Walls Enable Open, Scalable, and Programmable Microfluidics	Hajin Oh	Purdue University
Space--Time Acoustofluidic Tweezers for Dynamic and Selective Manipulation of Microparticles	Haojun Xu	Duke University
Acoustic Measurement of Meniscus-Modified Wave Transmission Past Surface-Piercing Barriers	Harrison Roth	University of Mississippi
Acoustic Metamaterials-Driven Transdermal Drug Delivery for Rapid and On-Demand Management of Acute Disease	Hongwei Cai	Indiana University
Brainware: Organoid Computing for Speech Recognition	Huiyu Chu	Indiana University Bloomington
Phase Field Study of Solid Composite Propellant Grain Deflagration Coupling Burn Surface Regression, Ballistics, and Thermoelasticity	Jackson Plummer	Iowa State University
Automata-Architected Materials—A Gpu-Accelerated Framework for Emergent Multiscale Design	Jaime Berkovich	Massachusetts Institute of Technology
Phase Field Modeling of Solid Composite Propellant Regression with Voids	Jenna Stocker	Iowa State University
On-Chip Phased Interdigital Metamaterials Enable Micro/Nano Object Manipulation	Jiali Li	Virginia Tech
Acoustic Separation of Nanoscale Bioparticles with Bessel Surface Acoustic Waves	Jianping Xia	Duke University
Engineering Retinal Organoid and Eye-On-A-Chip Models: Opportunities for Acoustofluidic and Bioacoustic Integration	Jiansen Wang	Indiana University Bloomington
Rapid and Comprehensive Detection of Viral Antibodies and Nucleic Acids via Acoustofluidic Integrated Molecular Diagnostics Chip: Aimdx	Jiao Qian	Duke University
Towards Modular Construction of Light Neural Odes with Automation-Enabled Initialization to Offer Users in Engineering Mechanics with Interpretability	Jin-Song Pei	University of Oklahoma
Mem-Models: A Multi-Physics Hysteresis Modeling Family with New Physical Insights and Improved Computational Efficiency	Jin-Song Pei	University of Oklahoma
Modeling Stochastic Tensile Fracture Behavior in Engineered Cementitious Composites	Jingzhe Qiao	Clemson University
Sensor-Measurement Validated Modeling of Magnetic Braking in Conductive Tubes for Open-Source Physics Hardware	Jonathan Liu	Lexington High School; OpenApparatus
High-Rate Adhesion and Dynamic Delamination with Laser-Induced Membrane Expansion	Jonathan Raybin	National Institute of Standards and Technology
Optimal Design for Fracture: Enhancement and Bounds on Macroscopic Properties	Jorge Ramos-Munoz	Massachusetts Institute of Technology
Optimization of the Gyroid Structure for Improved Acoustic Damping Performance	Juan Gamo	Pennsylvania State University
Mechanically Responsive Pneumatic Logic Gates for Adaptive Soft Robotic Systems	Juan P. Monge Mesen	Purdue University
Precision Acoustofluidics for High-Throughput Mechanobiology in Suspension Cells	Kaichun Yang	Duke University
Nanoscale Acoustic Oscillator for Mechanoimmunology: Naomi	Ke Jin	Duke University

Title	Presenting Author	Institute Affiliation
Mapping Mechanical Deformation to Cell Injury in 3D Collagen Scaffolds	Kevin Logiudice	Brown University
Why Plants Grow the Way They Do: An Irl Approach to Biological Constitutive Laws	Kishore Shenoy	Georgia Institute of Technology
Evaluation Using a Free Radical Scavenger of Hydroxyl Radicals Generated Inside and Outside Cells by High-Frequency Sonochemical Activation	Kotaro Fujishiro	Tokyo University of Agriculture and Technology
The Hidden Size Effect in Architected Toughness: Critical Length Scales in Layered Materials	Kush Dwivedi	University of Washington
Temperature-Programmable Failure in Double-Network Metamaterials	Ling Xu	Massachusetts Institute of Technology
Phase-Field Fracture Modeling of Ammonium Perchlorate Composite Propellants under Mechanical Loading	Lucy Gates	Iowa State University
Biomechanics and Stress States of Deadhesion in Plant Cells	Luis Romaguera-Rios	Purdue University
Chirality-Tunable Acoustic Vortex Tweezers for Contactless Object Manipulation	Luyu Bo	Virginia Tech
Comparing the Performance of Novel Seismic Metamaterials and Conventional Base Isolation Systems in Mitigating Structural Response under Earthquakes	Luz Maria Agudelo Urrego	Purdue University
Programmable Acoustic Microrobots via Machine Learning–Guided Cilia Engineering	Mingyuan Liu	Duke University
Experimental Investigation of Thermophysical Properties of Fe3o4-H2o Nanofluids Across a Wide Concentration and Temperature Range	Mohsen Pourfallah	Prairie View A&M University
An Experimental Pipeline for Full-Field Indentation Microscopy (Fim): Toward Single-Test Quantification of Anisotropy and Nonlinearity	Nathan T. Scriba	University of Illinois at Urbana Champaign
Non-Covalent Functionalization Influence on Inter-Tube Interactions in Carbon Nanotube Mats under Impact	Nicholas Jaegersberg	University of Wisconsin - Madison
Mechanical Behaviour of Interpenetrating Phases Composites Ti6al4v/Pdms under Dynamic Loading	Paul Jabin Echeveste	CEA-CESTA; University of Bordeaux
Targeted Heterogeneity in Lightweight Architected Lattice Structures for Enhanced Energy Absorption	Prathik Narayanan	Brown University
Gpu-Accelerated 3D Physics Simulator for Soft Growing Robots	Priyanka Bhovad	Purdue University
Physics-Informed Machine Learning for Constitutive Modeling of Anisotropic Damage in Polymeric Networks	Qiang Guo	University of Colorado Colorado Springs
Strain-Induced Tuning of Ultrasound in Microscale Acoustic Metamaterials	Rachel Sun	Massachusetts Institute of Technology
Dynamic Mechanical Response of Spinodal Architectures Across Length and Time Scales	Rishi Kommalapati	MIT
Static Behaviour and Classification of Shear-Thinning Droplets on Inclined Hydrophobic Substrates	Rohit, Rohit	Indian Institute of Technology Patna
Curved-Surface Acoustic Holography for Patterned Retinal Stimulation	Ruxin Li	Purdue University
Experimental Studies on the Stability of Active Arches Subjected to Longitudinally Non-Uniform Photo-Thermal Stimulus	Sarah Norek	Hope College
Mechanically Driven Membrane Transport and Biochemical Control Using Deployable Nanostructures	Seongmin Seo	Purdue University

Title	Presenting Author	Institute Affiliation
AI-Enabled Dynamic Echocardiography Reveals Reduced Aortic Root Circumferential Strain in Pediatric Marfan Syndrome	Shubh Mehta	Purdue University
Automated Aortic Root Biomechanics in Marfan Syndrome Using a Spatiotemporally Guided Deep Learning Network	Shubh P. Mehta	Purdue University
Impact of Biaxial Deformations on the Swelling Equilibria of Polymer Gels with Controlled Network Structure	Shuyi Zhang	University of Akron
Fluid Flow Measurements in Nanoslits Using Holographic Microscopy	Siyang Yu	Washington University in St. Louis
Cable Pneumatic Robot: Fabrication and Simulation	Songjie Jia	Michigan Technological University
Cutting Mechanics: A Fractographic Perspective in Soft Materials.	Srividhya Sridhar	University of Illinois
Structural Safety under Multi-Hazard Conditions Considering Concurrent Interactions Among Multiple Failure Mechanisms: Case Studies of Large-Scale Structural Failures	Su Hao	ACII, Inc.
Effects of Acoustic Energy Density, Flow Velocity, and Particle Size on Fibrous Filter Capture Efficiency under Standing Wave Excitation	Sudharshan Anandan	Purdue University
Improved Fluid Handling and Manipulation Using a Floating Electrode Unidirectional Transducer	Sujith Jayakumar	Washington University in St. Louis
The Role of Anisotropic Invariants in Large-Deformation Hyperelastic Constitutive Modeling of Fiber-Reinforced Soft Materials	Surya Sidhartha Kolluri	Brown University
Coupled Modeling of Rheological Behavior and Size-Segregation Dynamics in Bidisperse Granular Media	Surya Sidhartha Kolluri	Brown University
Geometric Design and Modal Analysis of Fractally Graded Architected Materials	Suryapavan Cheruku	Texas A&M University
A Mechanics Framework and Finite Element Modeling of Peeling in Isotropic-Genesis Polydomain Liquid Crystal Elastomer Tapes	Theresa Tsaggaris	California Institute of Technology
Enhancing Synthetic Peptides with Cell Binding Epitopes for Exfoliation of Mos2	Wade Cornell	University of Central Florida
Robot-Assisted Acoustic Vortex Tweezers for over Barriers Manipulation	Wenhao Zhang	Virginia Tech
Real-Time Visualization and Characterization of Dynamic Acoustofluidic Fields via Schlieren Imaging	Wenyi Huang	University of Pennsylvania
Mxene-Based Light-Driven Soft Robotics	Xingjian Hu	Duke University
Phorm: A Plug-And-Play High-Fidelity Origami Robotic Manipulator	Xinqi Zhang	University of Michigan
Identifying Potential Mild Traumatic Brain Injury Events through Inertial Sensor Based Kinematics and Continuum Mechanics Based Strain Calculations	Yang Wan	Northeastern University
An Intelligent Closed-Loop System for Personalized Pain Management	Yantao Xing	Indiana University Bloomington
At the Threshold: Measuring Limiting Fracture Energy in a Model Silicone Elastomer	Yashwanth Nagarajan	University of Illinois
Understanding Immune-Driven Brain Aging by Human Brain Organoid Microphysiological Analysis Platform	Yi Gao	Indiana University Bloomington
Sample Geometry and Boundary Conditions Impact the Torsional and Axial Stiffness of Soft Solids with Isolated and Full-Face Contact Loadings	Yi-Chen Li	The University of Akron

Title	Presenting Author	Institute Affiliation
Frequency-Encoded Control for Multi-Functional, Modular, Untethered Robots	Yibo Fu	Georgia Institute of Technology
Operando Optical Imaging of Graphite Lithiation: Correlating Particle-Level Color Evolution with State of Charge	Yimin Zeng	Purdue University
In-Petri Dish Acoustic Vortex Tweezer for Cell Aggregation	Yingshan Du	Virginia Tech
Programmable Acoustofluidic Engineering for Creating Gradient Biomaterials	Yujing Lu	Duke University
Multifunctional Contactless Manipulation via Airborne Acoustic Vortex Tweezers	Zhide Wang	Virginia Tech
Acoustofluidic System Fortargeted Antibody Removal in Transplantation: Enabling Small-Volume Therapeutic Apheresis	Zhiteng Ma	Duke University
Deep Drug Delivery in Tumor Therapy by Conformal Microneedle Beat-Frequency Enhanced Sonophoresis Technology (Cm-Best)	Zhiyu Zhao	Duke University
One-Stop Microfluidic Assembly of Human Brain Organoids for Modeling Prenatal Cannabis Exposure	Zichen Hong	Indiana University

Tuesday, October 13, 2026

7:00 - 12:00 PM

Conference Registration - STEW 109 BC, 7:00 AM - 4:00 PM

7:00 AM - 8:00 AM

Light Breakfast, Lobby of Loeb Playhouse, STEW, 7:00 - 8:00 AM

7:45 AM - 8:00 AM

Welcome Nikhilesh Chawla, Associate Dean for Research, College of Engineering, Purdue University and Ransburg Professor

8:00 AM - 9:00 AM

Plenary Session

Location: Loeb Playhouse, Stewart Center

Speaker: Vijay Kumar (Eringen Medalist)

9:15 AM - 10:55 AM

7.11.4: AI for Advanced Materials and Structures

Location: STEW 202

Moderators: Emma Lejeune

Machine Learning-Enabled Mechanical Analysis and Optimization of Bioinspired Functionally Graded Materials

9:15 AM - 9:35 AM

Speaker: Zhaoxu Meng, Clemson University

Manufacturing-Constrained Generative Design of Injection-Moldable Periodic Shell Metamaterials for Stiffness and Energy Absorption

9:35 AM - 9:55 AM

Speaker: Hyunmoon Cho, University of California

Training-Free High-Resolution 3D Microstructure Reconstruction via Stochastic Patch-Based Optimization with Transfer Learning

9:55 AM - 10:15 AM

Speaker: Ashwini Gupta, Johns Hopkins University

Generative Design of Architected Lattice Scaffolds for Heterogeneous Material Integration

10:15 AM - 10:35 AM

Speaker: Yujie Shan, University of California

Interface-Aware Deep Energy Method for Predicting the Mechanical Response of Tapered Composite Laminates

10:35 AM - 10:55 AM

Speaker: Marwa Yacouti, University of Colorado Boulder

9:15 AM - 10:55 AM

2.2.1: Biomechanics and Biomimetics Across Time and Length Scales

Location: STEW 204

Moderators: Claire Acevedo, Hortense Le Ferrand

Multiscale Mechanical Behavior of Bone: Linking Microstructural Heterogeneity to Implant-Scale Load Transfer

9:15 AM - 9:35 AM

Speaker: Yuxiao Zhou, Texas A&M University

Viscous Dissipation in Nanoscale Mineralized Fibrils and Interfaces

9:35 AM - 9:55 AM

Speaker: Riti Sharma, University of Pennsylvania

A Deep-Learning-Enabled Workflow for 4D in Situ Structural Analysis of Fatigue Crack Growth in Bone

9:55 AM - 10:15 AM

Speaker: In Kyu Lee, UC San Diego

Size Effects in Human Cortical Bone Fracture: Experiments and Simulations

10:15 AM - 10:35 AM

9:15 AM - 10:55 AM

Speaker: Thomas Siegmund, Purdue University

Emergent Mechanical Reinforcement in Biological Transport Networks

10:35 AM - 10:55 AM

Speaker: Stephen Ching, Bioengineering, University of Pennsylvania

2.9.4: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Junfei Li

Adaptive Acoustofluidic Control Enables Uniform and Scalable 3D Tumor Models

9:15 AM - 9:35 AM

Speaker: Martin Wiklund, KTH Royal Institute of Technology

Airway Defense: Its Biological Models and Engineering Products

9:35 AM - 9:55 AM

Speaker: Yuliang Xie, University of Iowa

From Light to Sound: Imaging, Treating, and Building Tissues at Depth

9:55 AM - 10:15 AM

Speaker: Junjie Yao, Duke University

Enhanced Drug and Gene Delivery with Acoustically Powered Microrobots

10:15 AM - 10:35 AM

Speaker: Wyatt Shields, University of Colorado Boulder

Development of Vibrating Sharp-Edge Spray Ionization (VSSI) for Advancing Mass Spectrometry Analysis

10:35 AM - 10:55 AM

Speaker: Peng Li, Lehigh University

9:15 AM - 10:55 AM

2.3.4: Structure and Mechanics of Living and Bioinspired Materials

Location: STEW 214A

Moderators: Jingjie Yeo

Bone-Inspired Mechanically Adaptive Materials

9:15 AM - 9:35 AM

Speaker: Sung Hoon Kang, Korea Advanced Institute of Science and Technology (KAIST)

Echinoderm Stereom as a Natural Architected Mechanical Metamaterial: Structure, Mechanics, and Multifunctionality

9:35 AM - 9:55 AM

Speaker: Ling Li, University of Pennsylvania

Built to Crush: What Alligator Teeth Teach Us about Structure and Toughness

9:55 AM - 10:15 AM

Speaker: Michael Lewis, University of South Florida

A Scale-Dependent Transition from Density- to Connectivity-Controlled Mechanics in Hierarchical Biological Materials: Lessons from the Lacunar Network of Trabecular Bone

9:15 AM - 10:55 AM

10:15 AM - 10:35 AM

Speaker: Milad Masrouri, Syracuse University

Design and Prototyping of a Nanoscale Jitterbug Transformer Using DNA Origami

10:35 AM - 10:55 AM

Speaker: Seongmin Seo, Purdue University

2.5.4: Cell Mechanics and Mechanobiology

Location: STEW 214B

Moderators: Jacob Notbohm, Shiva Rudraraju

Determination of Critical Cellular Traumatic Brain Injury Thresholds

9:15 AM - 9:35 AM

Speaker: Jessica Park, UW-Madison, Mechanical Engineering

Glutamate Excitotoxicity in Tbi: A Mechano-Chemical Framework for Quantitative Modeling of Synaptic Pathways

9:35 AM - 9:55 AM

Speaker: Pratyusa Kar, University of Wisconsin Madison

Role of Pulsed High-Power Microwave Exposure in Neuronal Injury: A Multiscale Modeling Approach

9:55 AM - 10:15 AM

Speaker: Md Nahian Bin Hossain, The University of Texas at Arlington

A Mathematical Study of Elevated Intracranial Pressure Effects on Functional-Structural Interactions of Synchronized Neurons

10:15 AM - 10:35 AM

Speaker: Audrey Moore, The Pennsylvania State University

Impact of Cellular Strain on Neuronal Signaling Using an Integrated Neuron Aggregate Model

10:35 AM - 10:55 AM

Speaker: Md Navid Imtiaz Rifat, University of Texas at Arlington

9:15 AM - 10:55 AM

3.2.1: Mechanics of Fibrous Materials: From Structure to Function

Location: STEW 214C

Moderators: Hamed Hatami-Marbini

Inclusions in Network Materials Vs. Network Materials with Continuum Matrix

9:15 AM - 9:35 AM

Speaker: Catalin Picu, Rensselaer Polytechnic Institute

Tensile and Fracture Behavior of Nanofiber Networks with Enhanced Inter-Fiber Adhesion

9:35 AM - 9:55 AM

Speaker: Mohammad Islam, University of Texas Rio Grande Valley

Mechanical Communication in Random Fibrous Networks: Roles of Prestress, Bending Rigidity, and Connectivity

9:55 AM - 10:15 AM

Speaker: Hamed Hatami-Marbini, Mechanical and Industrial Engineering, University of Illinois Chicago

Building Blocks for Understanding Mechanical Signaling in Fibrous Materials

10:15 AM - 10:35 AM

Speaker: Quan Nguyen, Boston University

9:15 AM - 10:55 AM

3.4.4: Mechanics of Materials and Structures for In-Space Manufacturing and Deployable Structures

Location: STEW 214D

Moderators: Sameh Tawfick

Solar Forming of Metallic Structural Components for Orbital Manufacturing

9:15 AM - 9:55 AM

Speaker: Connor McMahan, HRL Laboratories

9:15 AM - 10:55 AM

No Man's Land of Alloy Solidification

9:55 AM - 10:15 AM

Speaker: Yifan Cao, Massachusetts Institute of Technology

Low Energy Curable Dicyclopentadiene-Epoxy Blends for In-Space Manufactured Composites

10:15 AM - 10:35 AM

Speaker: Baxter Tindall, University of Illinois Urbana-Champaign

3.5.4: Direct Ink Writing: From Process Mechanics and Control to Microstructure and Architected Materials

Location: STEW 218A

Moderators: Jochen Mueller

Acoustic Field Assisted Aerosol Jet Direct Writing for the Additive Manufacturing of Multifunctional Devices

9:15 AM - 9:35 AM

Speaker: Tyler Ray, University of Hawaii at Manoa

Mechanics-Guided Spreading of Polymeric Inks for On-Liquid Soft Devices

9:35 AM - 9:55 AM

Speaker: Baoxing Xu, University of Virginia

Modelling Deformation Coupled Ion-Transport for Grayscale Dlp 3D Printing

9:55 AM - 10:15 AM

Speaker: Deep Malu, Georgia Institute of Technology Atlanta

Sequential Lpbf and Material Extrusion for 4D-Printed Actuators

10:15 AM - 10:35 AM

Speaker: Jorge Canada, IMDEA

9:15 AM - 10:55 AM

3.8.4: Programmable Morphing Matter: Bridging Bioinspiration, Mechanics, and Autonomous Design

Location: STEW 218B

Moderators: Lining Yao

Folding from Stretching: From Natural Leaves to Elastic Plates

9:15 AM - 9:35 AM

Speaker: Mingchao Liu, University of Birmingham

Geometry-Material Coupling for Mobility Control in Environmentally Driven Systems

9:35 AM - 9:55 AM

Speaker: Seola Lee, Harvard University

A Category-Theoretic Framework from Biological Material Dynamics to Engineered Stimulus-Response Systems

9:55 AM - 10:15 AM

Speaker: Lee Marom, Massachusetts Institute of Technology

One-Shot Generative Model for Disordered Metamaterial via Self-Organizing Neural Cellular Automata

10:15 AM - 10:35 AM

Speaker: Liwei Wang, Carnegie Mellon University

Mechanics-Guided Design of Passive Underwater Suction Adhesives with Percolation-Mediated Leakage

10:35 AM - 10:55 AM

Speaker: Abdallah Aly, University of Illinois Urbana Champaign

9:15 AM - 10:55 AM

4.1.1: Liquid Crystal Elastomers: Integrating the Mechanics of Liquid Crystals and Polymer Networks for Programmable Stimuli-responsive Materials

Location: STEW 218C

Moderators: Jerry Qi

Liquid Crystal Elastomer-Liquid Metal (Lce-Lm) Composites for Amphibious Locomotion and Object Manipulation

9:15 AM - 9:35 AM

Speaker: Renee Zhao, Stanford University

A Mechanics Framework and Finite Element Modeling of Peeling in Isotropic-Genesis Polydomain Liquid Crystal Elastomer Tapes

9:35 AM - 9:55 AM

Speaker: Theresa Tsaggaris, California Institute of Technology

Inverse Design Framework for Functional Lce Materials with Strongly Coupled Thermomechanical Interactions

9:55 AM - 10:15 AM

Speaker: Yibo Wang, University of Illinois

Interplay of Mesogen Rotation and Pore Structure in Liquid Crystal Elastomer Foams

10:15 AM - 10:35 AM

Speaker: Anjali Agrawala, Johns Hopkins University

Dynamic Current Routing for Adaptive Control of Liquid Crystal Elastomers

10:35 AM - 10:55 AM

Speaker: Morgan Barnes, University College London

9:15 AM - 10:55 AM

4.4.1: Controlling Mechanical Waves with Metamaterials

Location: STEW 218D

Moderators: Serife Tol

Nonabelian Wave Propagation in a Continuous Elastic Metamaterial

9:15 AM - 9:35 AM

Speaker: Fabio Semperlotti, Purdue University

Relaxed Periodicity for Spatially Programmable Wave Control

9:35 AM - 9:55 AM

Speaker: Mohammad Charara, Massachusetts Institute of Technology

Axial-Bending Coupling Governing Band Gap Onset in Two-Dimensional Beam Networks

9:55 AM - 10:15 AM

Speaker: Kwangmin Lee, Johns Hopkins University

Enhanced Vibration Attenuation via Structurally Engineered Frozen Mode Regime

10:15 AM - 10:35 AM

Speaker: Robert Calvo, University of Wisconsin - Madison

9:15 AM - 10:55 AM

3.7.4: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Jie Yin

Paleobionics – Exploring Locomotion of Extinct Echinoderms Using Soft Robotics

9:15 AM - 9:55 AM

Speaker: Carmel Majidi, Carnegie Mellon University

Safe Autonomy for Soft Robots

9:55 AM - 10:15 AM

Speaker: Andrew Sabelhaus, Boston University

Dynamic Tuning of Friction and Adhesion of Contact Surfaces in Robots

10:15 AM - 10:35 AM

Speaker: Kevin Turner, University of Pennsylvania

9:15 AM - 10:55 AM

4.2.4: Advances on the Mechanics of Architected Materials

Location: STEW 279

Moderators: Carlos Portela

Polyanisomat: An Efficient Matlab Code for Multi-Anisotropic-Material Topology Optimization with Spatially Variable Relative Density and Orientation

9:15 AM - 9:35 AM

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

Speaker: Emily Sanders, Georgia Institute of Technology

A Parameterized Microstructure Spanning the Bounds of Extremal Elastic Property Space

9:35 AM - 9:55 AM

Speaker: Xiaojia Shelly Zhang, University of Illinois at Urbana-Champaign

Topology Optimization of Programmable Acoustic Metamaterials

9:55 AM - 10:15 AM

Speaker: - Liza, University of Illinois Urbana Champaign

Emergence of Nonlocality in Architected Materials

10:15 AM - 10:35 AM

Speaker: Kaushik Dayal, Carnegie Mellon University

Uncertainty Quantification of Postbuckling Behavior of Architected Materials via Sensitivity-Enhanced Gaussian Processes

10:35 AM - 10:55 AM

Speaker: David Restrepo, The University of Texas at San Antonio

2.6.4: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310

Moderators: Farid Alisafaei, Hanxun Jin

Ultra-High-Resolution Sensor Reveals Cellular Force Histories in 3D Matrices: From Neuroscience to Cancer Mechanobiology

9:15 AM - 9:35 AM

Speaker: M Taher Saif, University of Illinois at Urbana-Champaign

Probing Strain-Rate-Dependent Mechanics of Single Cell-Cell Junctions

9:35 AM - 9:55 AM

Speaker: Ruiguo Yang, Michigan State University

Probing Intracellular Rheology at Extreme Strain Rates Using Laser-Induced Cavitation

9:55 AM - 10:15 AM

Speaker: Jacob Baker, The University of Texas at Austin

Sonomechanics: Programming Polymer Networks and Biointerfaces with Sound

10:15 AM - 10:35 AM

Speaker: Jianyu Li, McGill University

Forces Exerted by Tardigrades

10:35 AM - 10:55 AM

Speaker: Amrinder Nain, Virginia Tech

4.10.4: Advances in Experimental and Modeling Studies of High Strain-Rate Mechanics

Location: STEW 311

Moderators: Sinan Müftü

Dynamic Shear Strength of Hydroxyl-Terminated Polybutadiene (Htpb) Polymer at High Pressures and High Strain-Rates.

9:15 AM - 9:35 AM

Speaker: Srijan Neogi, Brown University

Microstructure-Informed Constitutive Modeling of Ultra-High Molecular Weight Polyethylene Laminates for Ballistic Simulation

9:35 AM - 9:55 AM

Speaker: Tengxiao Li, Brown University

Highs Shear Rate Characterization of Thermoplastics Using 2D Hat Shaped Specimens

9:55 AM - 10:15 AM

Speaker: Alireza Amirkhizi, University of Massachusetts

Shock Wave Propagation within Particulate-Polymer Composites with Different Particle Sizes

10:15 AM - 10:35 AM

Speaker: Yerlik Gabdulla, University of Iowa

9:15 AM - 10:55 AM

1.2.1: Eringen Medal Symposium in Honor of Vijay Kumar

Location: STEW 313

Moderators: Koushil Sreenath

From Algebraic Graph Theory to Algebraic Topology: Optimization, Planning and Control of Networked and Robotic Systems

9:15 AM - 9:35 AM

Speaker: Subhrajit Bhattacharya, Lehigh University

Formal Methods for Safe and Interpretable Control

9:35 AM - 9:55 AM

Speaker: Calin Belta, University of Maryland

Relaxed Notions of Symmetry for Efficient Learning and Control in Robotics

9:55 AM - 10:15 AM

Speaker: Jake Welde, Cornell University

From Swarms to Flows: Preserving Structure to Enable Autonomy

10:15 AM - 10:35 AM

Speaker: M. Ani Hsieh, University of Pennsylvania

Learning Continuous Representations of Hybrid Dynamical Systems

10:35 AM - 10:55 AM

Speaker: Koushil Sreenath, University of California

9:15 AM - 10:55 AM

1.3.4: Y. Huang Engineering Science Medalist Symposium in Honor of Dimitris C. Lagoudas: Smart and Multifunctional Materials

Location: STEW 314

Moderators: Gary Seidel

Phase Transitions in Living Composites

9:15 AM - 9:35 AM

Speaker: M Taher Saif, University of Illinois at Urbana-Champaign

Growth Printing: A Rapid, Energy-Efficient Manufacturing Process for Thermoset Polymeric Parts Based on Frontal Polymerization

9:35 AM - 9:55 AM

Speaker: Philippe Geubelle, University of Illinois Urbana-Champaign

Controlling Microstructural Alignment in Direct Ink Writing for Architected Multifunctional Materials

9:55 AM - 10:15 AM

Speaker: Zoubeida Ounaies, The Pennsylvania State University

4D Multi-Material Extrusion of Piezoelectric Structures for Sensing and Actuation Applications

10:15 AM - 10:35 AM

Speaker: Nikolaos Michailidis, Aristotle University of Thessaloniki

Design and Additive Manufacturing of Composite Solids: Smart Components, Soft Robots, and Moldless Composite Structures

10:35 AM - 10:55 AM

Speaker: Martin Dunn, Univ Colorado Denver

9:15 AM - 10:55 AM

1.7.4: Structural Changes in Materials at Normal and Extreme Conditions: A Symposium in Honor of the 70th Birthday of Prof. Valery Levitas

Location: STEW 320

Moderators: Ashraf Bastawros

Characterizing Plastic Strain-Induced α - ω Phase

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

Transformation in Zr under High Pressure

9:15 AM - 9:35 AM

Speaker: Achyut Dhar, University of Minnesota

Investigation of Atomistic Mechanisms of Pressure Induced Processes in the High-Pressure Collaborative Access Team (Hpcat).

9:35 AM - 9:55 AM

Speaker: Dmitry Popov, HPCAT, X-ray Science Division, Argonne National Laboratory, Lemont IL

Bifurcation Theory of Plasticity, Damage and Failure

9:55 AM - 10:15 AM

Speaker: Alexander Umantsev, Fayetteville State University

Sharp: Shear-Assisted Heterogeneous Atomic Reconfiguration & Phase-Transformation

10:15 AM - 10:35 AM

Speaker: Kasma Momeni, University of Alabama

6.5.1: Computational Modeling of Physiological Flows

Location: RAWLS 1011

Moderators: Dongjie (Fred) Jia

Swirling Spheroidal Microswimmers in a Complex Fluid

9:15 AM - 9:35 AM

Speaker: Jiahao Gong, Purdue University

Mixed-dimensional Fluid–Structure Interaction Simulations Reveal Key Mechanisms of Cerebrospinal Fluid Dynamics in the Spinal Canal

9:35 AM - 9:55 AM

Speaker: Deshik Putluru, Purdue University

Compliance Strongly Reduces Pumping in Perivascular Flow in Deformable Porous Annuli

9:55 AM - 10:15 AM

Speaker: Nishanth Surianarayanan, Purdue University

Oscillatory Flow-Driven Scalar Transport in Micro-Ct Reconstructed Rat Cranial Trabecular Bone

10:15 AM - 10:35 AM

Speaker: Sagar Gharti, Embry-Riddle Aeronautical University

7.1.4: Scientific Machine Learning for Computational Mechanics

Location: RAWLS 1057

Moderators: Sascha Ranftl

Coupling Neural Operators with Numerical Solvers: Accuracy, Stability, and Scalability in Computational Mechanics

9:15 AM - 9:35 AM

Speaker: Somdatta Goswami, Johns Hopkins University

Learning and Inferring Multiphase Flow Dynamics in Porous Media Using Scientific Machine Learning: Application to Fluidflow Co2 Injection Experiments

9:35 AM - 9:55 AM

Speaker: Hannah Lu, The University of Texas at Austin

A Hyper-Reduction-Free Projection-Based Model Order Reduction Framework for Nonlinear Dynamical Systems

9:55 AM - 10:15 AM

Speaker: Parisa Khodabakhshi, Lehigh University

Neural Surrogates for Thermomechanical Prediction in Laser Powder Bed Fusion

10:15 AM - 10:35 AM

Speaker: Francis Ogoke, Carnegie Mellon University

7.12.4: Coupled Mechanics of Soft Solids

Location: RAWLS 1062

Moderators: Eric M. Stewart, Keven Alkhoury

9:15 AM - 10:55 AM

Effective Electrostatic Response of Medium with Internal Dipolar Interactions

9:15 AM - 9:35 AM

Speaker: Gal Debotton, Ben-Gurion Univ.

Electromagneto-Elasticity in the Eddy Current Approximation and Its Numerical Implementation in the Open-Source Finite Element Program Fenicsx

9:35 AM - 9:55 AM

Speaker: Eric Stewart, University of Cincinnati

Bridging Fibril Agglomeration to the Macroscale Mechanics of Cellulose Nanofibril Gels

9:55 AM - 10:15 AM

Speaker: Samir Patel, University of Wisconsin-Madison

Investigating the Impact of Photo-Degradation on Mechanical Behavior of Cellulose Acetate

10:15 AM - 10:35 AM

Speaker: Shawn Chester, New Jersey Institute of Technology

A Mesoscale Network Evolution-Based Constitutive Modeling of Vitrimers under Oxidative Aging

10:35 AM - 10:55 AM

Speaker: Md Rezaul Karim, Michigan Technological University

7.8.1: Advances in Experimental Mechanics: New methods, Instrumentation, and Data Driven Discovery

Location: RAWLS 1071

Moderators: Vatsa Gandhi

Linking UV Curing Conditions to the Dynamic Mechanical Properties of Photocrosslinked Hydrogels

9:15 AM - 9:35 AM

Speaker: Yujie Zhang, The University of Texas at Austin

Viscoelastic Characterization of Polyacrylamide Hydrogels via Microindentation

9:35 AM - 9:55 AM

Speaker: Matt Breier, University of Michigan

The Emergence of End Effects in Hyperelastic Solids under Large Deformation

9:55 AM - 10:15 AM

Speaker: Fahim Dorsey, University of Illinois Urbana-Champaign

Phase-Referenced Detection of Motion during Coherent X-Ray Nanomechanical Testing

10:15 AM - 10:35 AM

Speaker: Diptiman Kundu, Northwestern University

9:15 AM - 10:55 AM

6.1.4: Mechanics of Granular Media: Experiments, Theory, and Modeling

Location: RAWLS 1086

Moderators: Paul Mort

Oscillatory Shear Rheology Applied to Flow Transitions in Dry Granular Flows

9:15 AM - 9:35 AM

Speaker: Donovan Stumpf, Purdue University School of Materials Engineering

Inferring Resistive Forces on a Compliant Intruder in Granular Media Using X-Ray Radiography

9:35 AM - 9:55 AM

Speaker: Amir Nazemi, University of Michigan

Modeling Granular Intrusion in Sandy Soils Across Numerical Scales

9:55 AM - 10:15 AM

Speaker: Lale Yilmaz, MIT

Reduced Order Modeling of Intrusion Problems in Inclined Granular Media

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

10:15 AM - 10:35 AM

Speaker: Konrad Keihl, University of California

Shear Induced Layering in Bidisperse Granular Flows at High Size Ratios

10:35 AM - 10:55 AM

Speaker: Neiladri Sekhar Ray, Northwestern University

5.3.4: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

Bending-Enabled Bistability of Architected Materials with Three-Dimensional Geometry

9:15 AM - 9:35 AM

Speaker: Sibor Zhang, Architectural and Environmental Engineering, The University of Texas at Austin, TX, 78712, USA.

Energy Storage and Force Amplification through Coupled Bi-Stable Elements

9:35 AM - 9:55 AM

Speaker: Victor Riera Naranjo, Georgia Institute of Technology

Countersnapping Instabilities: Design, Exotic Mechanical Properties and Prospects for Applications

9:55 AM - 10:15 AM

Speaker: Paul Ducarme, Northwestern University

5.1.1: Mechanics of Interfaces: Deformation, Adhesion, Fracture, and Friction

Location: KRAN G010

Moderators: Qihan Liu

Adhesives with a Thickness Smaller Than the Fractocohesive Length Enhance Adhesion

9:15 AM - 9:35 AM

Speaker: Jiawei Yang, Worcester Polytechnic Institute

Simulation of Crack Propagation in Soft Materials

9:35 AM - 9:55 AM

Speaker: Gurmeet Singh, North Dakota State University

Understanding the Detachment Mechanics of Electroadhesive Interfaces via Capacitance Measurements

9:55 AM - 10:15 AM

Speaker: Daelan Roosa, Mechanical Engineering and Applied Mechanics, University of Pennsylvania

Reversible Underwater Osmocapillary Adhesion

10:15 AM - 10:35 AM

Speaker: Qihan Liu, University of Pittsburgh

5.6.1: Computational Fracture Mechanics Across Materials and Length Scales

Location: KRAN G012

Moderators: Trisha Sain

Classical Variational Phase-Field Models Cannot Predict Fracture Nucleation

9:15 AM - 9:35 AM

Speaker: John Dolbow, Duke University

Adaptive Mesh Refinement and Coarsening for Phase-Field Fracture: A Fenicsx Implementation

9:35 AM - 9:55 AM

Speaker: Aarosh Dahal, Georgia Institute of Technology

Modeling Crevasse Propagation in Glaciers Using Phase Field and Cohesive Fracture Models

9:55 AM - 10:15 AM

Speaker: Ravindra Duddu, Vanderbilt University

Deep Operator Learning for Phase-Field Modeling of Brittle

9:15 AM - 10:55 AM

9:15 AM - 10:55 AM

10:55 AM - 11:20 am

11:20 AM - 1:00 PM

Fracture

10:15 AM - 10:35 AM

Speaker: Elham Kiyani, Brown University

Estimating Fracture Properties of Cementitious Materials from Simple Experiments

10:35 AM - 10:55 AM

Speaker: Subhrangsu Saha, University of Illinois Urbana-Champaign

5.5.4: Mechanics of Failure in Network Materials

Location: KRAN G018

Moderators: Junsoo Kim

At the Threshold: Measuring Limiting Fracture Energy in a Model Silicone Elastomer

9:15 AM - 9:35 AM

Speaker: Yashwanth Nagarajan, University of Illinois

Imaging Stress Localization at the Transition from Cavity Expansion to Fracture

9:35 AM - 9:55 AM

Speaker: Shahar Gvirtsman, Civil and Environmental Engineering, MIT

Measuring the Multiaxial Failure Surface of Multi-Network Elastomers

9:55 AM - 10:15 AM

Speaker: Majed N. Saadawi, The University of Akron

Metal-Like Strain-Controlled Fracture in Soft Hydrogels

10:15 AM - 10:55 AM

Speaker: Takamasa Sakai, University of Tokyo

5.7.4: Mechanics of Damage, Fracture and Friction in Materials Across Scales

Location: KRAN G020

Moderators: Ahmed Elbanna

Numerical Assessment of Chipping Risk in Chemically Strengthened Glass with Various Edge Geometries

9:15 AM - 9:35 AM

Speaker: Qiongyu Chen, Corning Incorporated

Multiscale Experimental Investigation of Bearing Damage in Oxide/Oxide Ceramic Matrix Composites

9:35 AM - 9:55 AM

Speaker: Kratin Sanghvi, University of Illinois at Urbana-Champaign

Dynamic Fragmentation of Toughened Glass: From Microbranching to Macroscopic Scaling

9:55 AM - 10:15 AM

Speaker: Koushik Viswanathan, Indian Institute of Science Bangalore

Acoustic Emission Source Characterization Using Physics-Informed Methods

10:15 AM - 10:35 AM

Speaker: Kuang-Tsu Lee, Penn State University

Probabilistic Digital Twins for Damage Evolution: Low-Rank Filtering Strategies for Real-Time Estimation in High-Dimensional Fracture Models

10:35 AM - 10:55 AM

Speaker: Maryam Khodadad, Carnegie Mellon University

BREAK | Hospitality Rooms: STEW 302/306 & Rawls Atrium

5.2.4: Instabilities and Nonlinear Mechanics Across Structural Scales

Location: STEW 202

Moderators: Lucia Stein-Montalvo

Origami State Machine with Time-Varying Magnetic Fields

11:20 AM - 11:40 AM

Speaker: Yifan Rao, Princeton University

11:20 AM - 1:00 PM

Hysteretic Fractal Mechanical Systems

11:40 AM - 12:00 PM

Speaker: Shixi Zang, Princeton University

Inward Buckling of Confined Archimedean Spiral Structures Subjected to Volumetric Expansion

12:00 PM - 12:20 PM

Speaker: Xinran Shi, Northeastern University

2.2.2: Biomechanics and Biomimetics Across Time and Length Scales

Location: STEW 204

Moderators: Ottman Tertuliano, Claire Acevedo

Microstructure-Informed Biaxial Characterization of Heterogeneous Mechanics in Porcine Upper Gastrointestinal Tissues

11:20 AM - 11:40 AM

Speaker: Yue Li, Kennesaw State University

Anisotropic Indentation Microscopy (Aim) Resolves Differences in Endometrial Collagen Alignment

11:40 AM - 12:00 PM

Speaker: Catalina Bastias, University of Illinois Urbana-Champaign

In-Situ Broadband Micromechanics of Soft Biomaterials Enabled by Liquid Metal-Based Load Cells

12:00 PM - 12:20 PM

Speaker: Sinan Candan, University of Wisconsin-Madison

Fracture Toughness of Round Window Membrane via Thermodynamic Analysis of Microneedle-Mediated Perforation

12:20 PM - 12:40 PM

Speaker: Jeffrey Kysar, Columbia University

Dynamic Mechanical Characterization of Soft Biological Tissues via Inertial Microcavitation Rheometry

12:40 PM - 1:00 PM

Speaker: Surya Sidhartha Kolluri, Brown University

11:20 AM - 1:00 PM

2.9.5: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Junfei Li

Photo-Acoustofluidics-Driven Micro/Nano Manipulation and Phenotyping

11:20 AM - 11:40 AM

Speaker: Zhongqing Su, The Hong Kong Polytechnic University

Near-Field Acoustic Gripping for Contactless Manipulation

11:40 AM - 12:00 PM

Speaker: Ping Guo, Northwestern University

Electrokinetic Effects at the Interface between an Electrolyte and a Solid Supporting a Modulated Surface Acoustic Wave

12:00 PM - 12:20 PM

Speaker: Ofer Manor, Technion - Israel Institute of Technology

Programmable Acoustic Field Shaping for Droplet Bioprinting

12:20 PM - 12:40 PM

Speaker: Feiyan Cai, Shenzhen Institutes of Advanced Technology

Rethinking Multiphysics Sound-Matter Interactions: Enabling Acoustoactive Biomaterials for Imaging, Manufacturing, and Surgery

12:40 PM - 1:00 PM

Speaker: Xiao Kuang, University of Wisconsin-Madison

11:20 AM - 1:00 PM

2.3.5: Structure and Mechanics of Living and Bioinspired Materials

Location: STEW 214A

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

Moderators: Jingjie Yeo

Creep Growth in Plant Cell Walls: How Dislocations Help Plants Grow

11:20 AM - 11:40 AM

Speaker: Sulin Zhang, The Pennsylvania State University

From Cell-Wall Mechanics to Design and Manufacturing of Cw Inspired Structures

11:40 AM - 12:00 PM

Speaker: Anamika Prasad, Florida International University

Tunable Plant Cell Wall Mechanics: Roles of Hemicellulose and Expansin for Elastic and Viscoplastic Behavior

12:00 PM - 12:20 PM

Speaker: Si Chen, Cornell University

Glycine and Proline as Opposing Levers of Elasticity in Resilin-Like Polypeptides

12:20 PM - 12:40 PM

Speaker: Gabrielle Leinbach, Northwestern University

2.5.5: Cell Mechanics and Mechanobiology

Location: STEW 214B

Moderators: Jacob Notbohm, Shiva Rudraraju

Digital Twin Framework for Tbi Risk in Extreme Environments: Integrating Physical Surrogates and Biomechanical Models

11:20 AM - 11:40 AM

Speaker: Mohammad Ibrahim Hossain, University of Texas at Arlington

Morphology-Informed Hyper-Viscoelastic Micromechanical Response of Neocortex

11:40 AM - 12:00 PM

Speaker: Shuvo Chowdhury, The University of Texas at Arlington

Engineering Blood–Brain Barrier Microphysiological Systems to Model Alzheimer's Disease Monocyte Penetration and Infiltration

12:00 PM - 12:20 PM

Speaker: Po-Yu Liang, Indiana University

Molecular Modeling and Viscoelastic Characterization of Intrinsically Disordered Protein Tau

12:20 PM - 12:40 PM

Speaker: Arifin Sultana, University of Texas at Arlington

Coupling Confined Water Diffusion and Structural Integrity in Microtubules: A Molecular Dynamics Study

12:40 PM - 1:00 PM

Speaker: Ummay Wajiha Tabassum, University of Texas at Arlington

3.2.2: Mechanics of Fibrous Materials: From Structure to Function

Location: STEW 214C

Moderators: Hamed Hatami-Marbini

How Fiber Curvature Controls Nonlinear Mechanics of Random Fibrous Networks

11:20 AM - 11:40 AM

Speaker: Ashutosh Mishra, University of Illinois Chicago

Mechanosensitive Remodeling Sustains Rigidity Homeostasis and Elastic Memory in Actin Cortex Models

11:40 AM - 12:00 PM

Speaker: Haina Wang, University of Pennsylvania

Mechanistic Modeling of Aging Effects in Elastin Fiber Networks: Linking Microstructure to Mechanical Response

12:00 PM - 12:20 PM

Speaker: Zhaofan Li, University of Connecticut

Exploring the Effects of Fiber Reorientation and Anisotropy on Heart Valve Deformation with a New Anisotropic

11:20 AM - 1:00 PM

Hyperelastic Material Model

12:20 PM - 12:40 PM

Speaker: Nishan Parvez, Children's Hospital of Philadelphia, Philadelphia, PA.

3.4.5: Mechanics of Materials and Structures for In-Space Manufacturing and Deployable Structures

Location: STEW 214D

Moderators: Sameh Tawfik

Atomic Oxygen Degradation of Thin-Ply Composites

11:20 AM - 11:40 AM

Speaker: Chloé Zarader, University of Illinois Urbana-Champaign

Space Durability of Polydicyclopentadiene for Use in In-Space Manufacturing

11:40 AM - 12:00 PM

Speaker: Kenneth Cox, University of Illinois

Hypervelocity Impact Response of Carbon Fiber Composite Laminates for Space Applications

12:00 PM - 12:20 PM

Speaker: Pulkin Gupta, University of Illinois at Urbana-Champaign

Mechanical Qualification of Fromp-Manufactured Composite Longerons under Thermal Environments for Cislunar Situational Awareness Missions

12:20 PM - 12:40 PM

Speaker: Zheyuan Zheng, University of Illinois Urbana Champaign

Ultrathin Composite Boom with Distributed Flexible Sensing Network for Tunable Structural Deformation Detection

12:40 PM - 1:00 PM

Speaker: Connor Shannon, University of Illinois at Urbana Champaign

11:20 AM - 1:00 PM

3.6.1: AI Powered Inverse Design for Next Generation Composites

Location: STEW 218A

Moderators: Srikanth Pilla

Inverse Design of Hybrid Liquid-Metal Polymer Composites Using Machine Learning

11:20 AM - 11:40 AM

Speaker: Mohammad Malakooti, University of Washington

Generative Inverse Design of Frpc Laminates via Physically Constrained 3D Diffusion

11:40 AM - 12:00 PM

Speaker: Gang Li, Clemson University

Opensg: A Native ML-Assisted Framework for the Multiscale Constitutive Modeling of Composites

12:00 PM - 12:20 PM

Speaker: Akshat Bagla, Purdue University

Topology Optimization of Multi-Material Composite Laminates with Explicit Interface Modeling and Contact

12:20 PM - 12:40 PM

Speaker: Joshua Simpson-Gomez, University of Illinois at Urbana-Champaign

11:20 AM - 1:00 PM

3.8.5: Programmable Morphing Matter: Bridging Bioinspiration, Mechanics, and Autonomous Design

Location: STEW 218B

Moderators: Shelly Zhang

Dynamic "Living" Polymer That Can Grow, Degrow and Change Mechanical Properties on Demand

11:20 AM - 11:40 AM

Speaker: Yuhang Hu, Georgia Institute of Technology

Material Sentience: Design of Responsive Shape Memory Alloy Systems

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

11:40 AM - 12:00 PM

Speaker: Sheetal Agrawal, Rhode Island School of Design

Pneumatic Memristor Enabled by Elastic Multistabilities

12:00 PM - 12:20 PM

Speaker: Fangchen Zhao, University of California

Hygrochastic Seedpods: Engineering Microclimates for Ecological Restoration

12:20 PM - 12:40 PM

Speaker: Semina Yi, Morphing Matter Lab

Generative Co-Design of Material, Geometry, and Stimuli for Magnetically Responsive Hydrogel Sheets via Conditional Diffusion Model

12:40 PM - 1:00 PM

Speaker: Shicheng Li, Northwestern University

4.1.2: Liquid Crystal Elastomers: Integrating the Mechanics of Liquid Crystals and Polymer Networks for Programmable Stimuli-responsive Materials

Location: STEW 218C

Moderators: Tayler Hebner

Mechanics of Liquid Crystal Elastomer: Actuation, Adhesion and Dissipation

11:20 AM - 11:40 AM

Speaker: Shengqiang Cai, University of California

Making and Aligning Liquid Crystalline Elastomers: A Practical Guide for Mechanicians

11:40 AM - 12:00 PM

Speaker: Tim White, University of Colorado

Quasistatic and Dynamic Response of Polydomain Nematic Liquid Crystal Elastomers

12:00 PM - 12:20 PM

Speaker: Ara Kim, University of Wisconsin-Madison

Programming Actuation Modes in Liquid Crystalline Elastomer Fibers via Mesogen Composition

12:20 PM - 12:40 PM

Speaker: In-Sun Jeong, Pusan National University

4.4.2: Controlling Mechanical Waves with Metamaterials

Location: STEW 218D

Moderators: Ramathasan Thevamaran

Time-Modulated Active Acoustic Metamaterials

11:20 AM - 11:40 AM

Speaker: Bogdan-Ioan Popa, University of Michigan

Spectral Homogenization of Wave Motion in Space-Time Periodic Media

11:40 AM - 12:00 PM

Speaker: Othman Oudghiri-Idrissi, The University of Texas at Austin

A Reduced Relaxed Micromorphic Framework for Mechanical Wave Control in Metamaterials

12:00 PM - 12:20 PM

Speaker: Jan Fuhg, UT Austin

Analog Preprocessing for High-Accuracy Wave-Based Artificial Intelligence in Metamaterials

12:20 PM - 12:40 PM

Speaker: Mohamed Mousa, University at Buffalo (SUNY)

Wave Scattering in Defective Elastic Lattices

12:40 PM - 1:00 PM

Speaker: Charles Dorn, University of Washington

3.7.5: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Vanessa Sanchez

Metamaterials with a Twist

11:20 AM - 11:40 AM

Speaker: Jeffrey Lipton, Northeastern

Mxene-Based Actuators and Soft Robotics

11:40 AM - 12:00 PM

Speaker: Haozhe "harry" Wang, Duke University

Skeletonized Soft-Rigid Hybrid Robots Inspired by Stingrays

12:00 PM - 12:20 PM

Speaker: Connor Mccann, Worcester Polytechnic Institute

Large and Fully Soft Suction Cup Arrays for Compliant and Preload-Free Grasping

12:20 PM - 12:40 PM

Speaker: Qifan Yu, Massachusetts Institute of Technology

Proprioceptive Skeletal Muscle Biohybrid Actuators through Seamless Integration of Stretchable Electronics

12:40 PM - 1:00 PM

Speaker: Arielle Berman, Massachusetts Institute of Technology

11:20 AM - 1:00 PM

4.2.5: Advances on the Mechanics of Architected Materials

Location: STEW 279

Moderators: Tian Chen

Microbuckling-Field Theory: A Model for Material Instabilities in Cellular Solids

11:20 AM - 11:40 AM

Speaker: Ryan Mcavoy, UC Berkeley

The Limits of Continuum Approximations for Architected Materials Mechanics

11:40 AM - 12:00 PM

Speaker: Cyrus Fiori, California Institute of Technology

Driven Odd Elasticity in a Passive 2D Metamaterial

12:00 PM - 12:20 PM

Speaker: Mohamad Rahimi, Boston University

A Universal Framework for Linear Structure-Property Relations in Random Mechanical Metamaterials

12:20 PM - 12:40 PM

Speaker: Aayushi Chauhan, Massachusetts Institute of Technology

11:20 AM - 1:00 PM

2.6.5: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310

Moderators: Hanxun Jin, Farid Alisafaei

4D (Bio)fabrication of Biological Actuators

11:20 AM - 11:40 AM

Speaker: Ritu Raman, Massachusetts Institute of Technology

Scalable Generation of Microtissues with in Vivo-Like Tissue-Stroma Interfaces through Control of Cellular Contractility

11:40 AM - 12:00 PM

Speaker: Seamus M Mellican, University of Illinois Urbana-Champaign

An Engineered Bioreactor Reveals That Tensional Homeostasis in Tissues Arises from a Dynamic Balance between Fibroblast Contractility and Matrix Densification

12:00 PM - 12:20 PM

Speaker: Jacopo Ferruzzi, Department of Bioengineering, University of Texas at Dallas

Optogenetics-Free Light Modulation of Tissues: Bioprinted Optoelectronically Active Cardiac Tissues

12:20 PM - 12:40 PM

Speaker: Cunjiang Yu, University of Illinois Urbana-Champaign

Biophysics of T Cells in Cancer

12:40 PM - 1:00 PM

Speaker: David Odde, University of Minnesota

11:20 AM - 1:00 PM

4.10.5: Advances in Experimental and Modeling Studies of High Strain-Rate Mechanics

Location: STEW 311

Moderators: Jae-Hwang Lee

Cavitation-Induced Transient Wave Propagation on Soft Material Interfaces

11:20 AM - 11:40 AM

Speaker: Xin Wei, University of Wisconsin-Madison

Anisotropic Inertial Microcavitation in Fiber Phantoms and Cleared Tissues

11:40 AM - 12:00 PM

Speaker: Jingjing Chen, University of Michigan

Blast-Induced Large Deformations in Brain-Like Soft Matter

12:00 PM - 12:20 PM

Speaker: Enze Chen, University of Wisconsin-Madison

What Governs Particle Speed? Understanding the Underlying High Strain Rate Cavitation Event in Lipit

12:20 PM - 12:40 PM

Speaker: Katherine Evans, National Institute of Standards and Technology

Probing Anisotropic Soft Materials at Ultra-High Strain Rates Using Laser-Induced Inertial Cavitation

12:40 PM - 1:00 PM

Speaker: Sicong Wang, University of Texas at Austin

11:20 AM - 1:00 PM

1.2.2: Eringen Medal Symposium in Honor of Vijay Kumar

Location: STEW 313

Moderators: Mac Schwager

Scaling Physical Commonsense: The Path to Generalist Robotics

11:20 AM - 11:40 AM

Speaker: Matthew Turpin, Generalist AI

How General Are Generalist Robot Policies? Inductive Biases, Diagnostics, and Memorization in Vlas

11:40 AM - 12:00 PM

Speaker: Mac Schwager, Stanford University

Active Information Gathering in the Era of Foundation Models

12:00 PM - 12:20 PM

Speaker: Varun Murali, Texas A&M University

Toward Useful Humanoids: Dexterous Manipulation and Imitation Learning for Real-World Tasks

12:20 PM - 12:40 PM

Speaker: Monroe Kennedy, Stanford University

From Signed Distance Fields to Vision-Language Maps for Robot Task and Motion Planning

12:40 PM - 1:00 PM

Speaker: Nikolay Atanasov, University of California San Diego

11:20 AM - 1:00 PM

1.3.5: Y. Huang Engineering Science Medalist Symposium in Honor of Dimitris C. Lagoudas: Smart and Multifunctional Materials

Location: STEW 314

Moderators: Darren Hartl

Plastic Strain-Induced Phase Transformations under High Pressure: Multiscale Theory and in Situ Experiments

11:20 AM - 11:40 AM

Speaker: Valery Levitas, Iowa State University of Science and Technology

New Insights into Twinning in Shape Memory Materials-

11:20 AM - 1:00 PM

Addressing Slip Emission

11:40 AM - 12:00 PM

Speaker: Huseyin Sehitoglu, University of Illinois

Plastic Deformation of B19' Martensite by Kwinking – Where It Matters in Niti Technology

12:00 PM - 12:20 PM

Speaker: P. Šittner, Institute of Physics of the CAS

A Multifunctional Materials-By-Design Approach for Energetic Materials

12:20 PM - 12:40 PM

Speaker: Justin Wilkerson Wilkerson, Texas A&M

Bayesian Optimization for Accelerated Discovery and Design of Shape Memory Alloys

12:40 PM - 1:00 PM

Speaker: Raymundo Arroyave, Texas A&M University

1.7.5: Structural Changes in Materials at Normal and Extreme Conditions: A Symposium in Honor of the 70th Birthday of Prof. Valery Levitas

Location: STEW 320

Moderators: Ashraf Bastawros

Strength of Metallic Alloys-Insights at Atomic Levels

11:20 AM - 11:40 AM

Speaker: Huseyin Sehitoglu, University of Illinois

Unusual Plastic Strain-Induced Phase Transformation Phenomena in Silicon

11:40 AM - 12:00 PM

Speaker: Sorb Yesudhas, Iowa State University

Coupled Plastic Strain- and Stress-Induced Phase Transformations and Microstructure Evolution in Fe-7%Mn Alloy in Dynamic Rotational Diamond Anvil Cell

12:00 PM - 12:20 PM

Speaker: Mrinmay Sahu, Iowa State University

Modeling Coupled Severe Viscoplastic Deformations and Strain-Induced Phase Transformations under High Pressure.

12:20 PM - 12:40 PM

Speaker: Aniket Singh, Iowa State University

11:20 AM - 1:00 PM

6.5.2: Computational Modeling of Physiological Flows

Location: RAWLS 1011

Moderators: Sharun Kuhar

A Noninvasive, Patient-Specific Framework for Hemodynamic Assessment of Arterial Stenosis with Actionable Clinical Insights

11:20 AM - 11:40 AM

Speaker: Whitney Yu, Purdue University

Transport and Uptake after Subcutaneous Injection of Proteins

11:40 AM - 12:00 PM

Speaker: Sharun Kuhar, Purdue University

Cuffless Blood Pressure Monitoring with Biophysics-Informed Machine Learning Models

12:00 PM - 12:20 PM

Speaker: Christel Hohenegger, University of Utah

Flow-Based and Biochemical Markers of Thrombogenic Potential in Patient-Specific Left Atrial Simulations

12:20 PM - 12:40 PM

Speaker: Boyang Gan, Columbia University

Mechanistic Multiphysics Modeling Reveals How Blood Pulsation Drives Csf Flow, Pressure, and Brain Deformation under Physiological and Injection Conditions

12:40 PM - 1:00 PM

Speaker: Zhuogen Li, Purdue University

11:20 AM - 1:00 PM

7.1.5: Scientific Machine Learning for Computational Mechanics

Location: RAWLS 1057

Moderators: Sascha Ranftl

Deep Polynomial Chaos Expansion

11:20 AM - 11:40 AM

Speaker: Sascha Ranftl, Purdue University

Modeling Observable Dynamics: Flow Map Learning and Delay Representation

11:40 AM - 12:00 PM

Speaker: Dongbin Xiu, The Ohio State University

Graphical Conditional Generative Modeling for Interpretable Structure Discovery

12:00 PM - 12:20 PM

Speaker: Zongren Zou, California Institute of Technology

Learning Filtering Operators for Partially Observed Multiscale Systems

12:20 PM - 12:40 PM

Speaker: Pouria Behnoudfar, University of Wisconsin-Madison

11:20 AM - 1:00 PM

7.12.5: Coupled Mechanics of Soft Solids

Location: RAWLS 1062

Moderators: Shawn A. Chester, Vikas Srivastava

Bio-Inspired Tip-Growing Polymer Precipitate for 3D Microchannel Formation

11:20 AM - 11:40 AM

Speaker: Dongxu Liu, Cornell University

From Water Vapor Transmission Rate (Wvtr) to Intrinsic Water Vapor Permeability (Wvp)

11:40 AM - 12:00 PM

Speaker: Xianke Feng, The University of Texas at Austin

Atomistic Insights into Thermal Stability and Out-Of-Plane Fluctuations of 2Dpa-1 Monolayers

12:00 PM - 12:20 PM

Speaker: Md Rashidul Alam, The University of Texas at Austin

Effects of Hydration and Strain on Structure and Dynamics in Hydrogels

12:20 PM - 12:40 PM

Speaker: John Sansalone, Oden Institute for Computational Engineering and Sciences

Computational Modeling of Soft Polymer Contact on Non-Smooth Surfaces

12:40 PM - 1:00 PM

Speaker: Ghadir Haikal, North Carolina State University

11:20 AM - 1:00 PM

7.8.2: Advances in Experimental Mechanics: New methods, Instrumentation, and Data Driven Discovery

Location: RAWLS 1071

Moderators: Vatsa Gandhi

High-Speed Temperature Measurement System for Shock Compression Experiments

11:20 AM - 11:40 AM

Speaker: Vatsa Gandhi, University of California

Orientation-Dependent Dynamic Recrystallization in Silver at Extreme Strain Rates

11:40 AM - 12:00 PM

Speaker: Daniyar Syrlybayev, University of Wisconsin-Madison

Wave Modes in Millipede Bar and Their Implications to Design of a Compact Hopkinson Pressure Bar

12:00 PM - 12:20 PM

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

11:20 AM - 1:00 PM

Speaker: Salil Bavdekar, Illinois State University

In-Situ X-Ray Imaging of High-Velocity Impacts in Porous Geomaterials

12:20 PM - 12:40 PM

Speaker: Shachi Singh, Johns Hopkins University

Listening to Deformation: Data-Driven Acoustic-Emission Classification of Twinning and Slip in Magnesium

12:40 PM - 1:00 PM

Speaker: Eilon Faran, Technion, Israel Institute of Technology

6.1/6.3: Mechanics of Granular Media, Free-Surface Flows, and Electrohydrodynamics

Location: RAWLS 1086

Moderators: Paul Mort, Osman Basaran, Ajay Kumar

Nonlocal Drucker-Prager Plasticity: A Vumat Implementation, Verification, and Application

11:20 AM - 11:40 AM

Speaker: Timmy Ngo, Purdue University

Self-Similarity of Unbounded Viscous Marangoni Flows

12:00 PM - 12:20 PM

Speaker: Howard A. Stone, Princeton University

Electrohydrodynamic Instabilities of Drops in Dc Electric Fields

12:20 PM - 12:40 PM

Speaker: Diptendu Sen, Northwestern University

Weakly Nonlinear Analysis of Quincke Rotation

12:40 PM - 1:00 PM

Speaker: Ehud Yariv, Technion

5.3.5: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

Thermal-Dependent Nonlinear Vibrations of a Slender Bi-Metallic Beam: Experimental Investigation

11:20 AM - 11:40 AM

Speaker: Francesco Pellicano, University of Modena e Reggio Emilia

Transition Waves in Periodic and Functionally Graded On-Chip Multistable Metamaterials

11:40 AM - 12:00 PM

Speaker: Emil Bronstein, ETH Zürich

Exploring the Influence of Longitudinally Non-Uniform Stimulus Profiles on the Stability of Active Arches

12:00 PM - 12:20 PM

Speaker: Matthew Smith, Hope College

Fiber-Programmed Folding Instability in Swelling Hydrogel Bilayers

12:20 PM - 12:40 PM

Speaker: So Nagashima, Nagoya University

5.1.2: Mechanics of Interfaces: Deformation, Adhesion, Fracture, and Friction

Location: KRAN G010

Moderators: Qihan Liu

Experimental Molecular Dynamics for Deformation and Fracture

11:20 AM - 11:40 AM

Speaker: Scott Mao, Purdue University

Path-Dependent Interfacial Fracture Envelopes Revealed through a Dual-Actuator Loading Device

11:40 AM - 12:00 PM

Speaker: Deepika Gupta, The university of Texas at Austin

Molecular Dynamics Study of the Effects of Tool Rake Angle on the Brittle-To-Ductile Transition in Sapphire Cutting

12:00 PM - 12:20 PM

Speaker: Woo Kyun Kim, University of Cincinnati

Fracture Faces as Active Electrochemical Interfaces: A Coupled Wetting–Chemomechanical Framework

12:20 PM - 12:40 PM

Speaker: Sameep Shah, Purdue University

Evaluation of Interfacial Delamination in Au/Si Thin Films via Membrane Deflection Experiments and Inverse Analysis

12:40 PM - 1:00 PM

Speaker: Ye-Eun Lee, Jeonbuk National University

11:20 AM - 1:00 PM

5.6.2: Computational Fracture Mechanics Across Materials and Length Scales

Location: KRAN G012

Moderators: Aditya Kumar

When and Where Do Large Cracks Grow? Griffith Energy Competition Constrained by Material Strength

11:20 AM - 11:40 AM

Speaker: Oscar Lopez-Pamies, University of Illinois Urbana-Champaign

Machine-Learned Strength Surfaces and High-Regularization-Length Phase-Field Fracture

11:40 AM - 12:00 PM

Speaker: Chockalingam Senthilnathan, Purdue University

A Mixed-Mode Phase-Field Model for Dynamic Fracture in Fiber-Reinforced Composites

12:00 PM - 12:20 PM

Speaker: Md Abid Al Morshed, Michigan Technological University

Echelon Crack Formation Explained through a Strength-Constrained Phase-Field Model

12:20 PM - 12:40 PM

Speaker: Olivia Ward, Georgia Institute of Technology

Parametric Study of Dynamic Cohesive Zone Fracture

12:40 PM - 1:00 PM

Speaker: Benjamin Dankesreiter, Sandia National Laboratories

11:20 AM - 1:00 PM

5.5.5: Mechanics of Failure in Network Materials

Location: KRAN G018

Moderators: Craig Hamel

Entanglement Topology and Strength

11:20 AM - 11:40 AM

Speaker: Angela Guan, Northwestern University

Mechanical Strength and Healing in Entangled Materials

11:40 AM - 12:00 PM

Speaker: Saeed Pezeshki, University of Colorado

Helical Entanglements Increase Fracture Resistance of Polymer Network

12:00 PM - 12:20 PM

Speaker: Yan Huang, Northwestern University

Force-Activated Polymer Chain Scission: The Role of 3D Chain Conformations

12:20 PM - 12:40 PM

Speaker: Jie Zhu, University of Oxford

11:20 AM - 1:00 PM

12:30 PM - 2:00 PM

2:00 PM - 4:00 PM

2:00 PM - 4:00 PM

Topological Control of Mechanical Response in Polymer Networks

12:40 PM - 1:00 PM

Speaker: Ahmet Burak Yildirim, Northwestern University

5.7.5: Mechanics of Damage, Fracture and Friction in Materials Across Scales

Location: KRAN G020

Moderators: Ahmed Elbanna

Optimal Transport for Defect Evolution

11:20 AM - 11:40 AM

Speaker: Paria Behnoud, Carnegie Mellon University

Steering (In-Plane) Cracks via Out-Of-Plane Constraints: A 3D Computational Phase-Field Study

11:40 AM - 12:00 PM

Speaker: Liuchi Li, Princeton University

Multiscale Chemo-Mechanical Modeling of Crack Arrest in Nanolaminate Sodium-Ion Cathodes

12:00 PM - 12:20 PM

Speaker: Yetong Jia, Purdue University

Fracture of Soft Cellular Structures with Gradient Property

12:20 PM - 12:40 PM

Speaker: Ahmed Zubayer Raiyan, The University of Texas at Arlington

LUNCH PMU Ground Floor

1.4.1: SES Honorary Symposium

Location: STEW 202

Moderators: Yong Zhu, Sinan Keten

Mechanics for Merging Humans and Machines

2:00 PM - 2:40 PM

Speaker: Xuanhe Zhao, MIT

Stretchable Polymer-based Batteries: From Design to Ai-based Lifetime Prediction

2:40 PM - 3:20 PM

Speaker: Haleh Ardebili, University of Houston

A Variational Approach to the Optimal Design of Target Fields

3:20 PM - 4:00 PM

Speaker: Liping Liu, Rutgers University New Brunswick

2.2.3: Biomechanics and Biomimetics Across Time and Length Scales

Location: STEW 204

Moderators: Hortense Le Ferrand, Ottman Tertuliano

Mechanically Adaptive, Responsive, and Conformable Radiopaque Calcium Alginate Microspheres for Embolization

2:00 PM - 2:40 PM

Speaker: Jingjie Hu, North Carolina State University

Accelerating Cellulose Nanocomposite Design through Coarse-Grained Molecular Dynamics Simulation

2:40 PM - 3:00 PM

Speaker: Ning Zhang, Baylor University

Biohybrid Toggles: Amplifying Engineered Muscle Actuation with Bistable Mechanisms

3:00 PM - 3:20 PM

Speaker: Ronald Heisser, MIT

Modulation of Collagen Fiber Sliding by Hyaluronic Acid within Intact Tissues

3:20 PM - 4:00 PM

Speaker: Sarah Calve, University of Colorado Boulder

2:00 PM - 4:00 PM

2.9.6: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Junfei Li

Ultrasound Control of Genetics/Epigenetics and Immunoengineering for Immunotherapy

2:00 PM - 2:20 PM

Speaker: Wei Fan, usc

Neurosonics: Engineering Mechanical Interfaces with the Brain

2:20 PM - 2:40 PM

Speaker: Hong Chen, Washington University in St. Louis

Acoustic Manipulation of Nanoparticles in Confined and Evaporating Flows

2:40 PM - 3:00 PM

Speaker: Arezoo Ardekani, Purdue University

Deformation-Aware Soft Ultrasound Arrays with Integrated Shape Sensing for Wearable Volumetric Imaging

3:00 PM - 3:20 PM

Speaker: Xiaoyue Ni, Duke University

Acoustic Cavitation Enhancement for Intravascular Sonothrombolysis

3:20 PM - 3:40 PM

Speaker: Xiaoning Jiang, North Carolina State University

Super-Resolution Ultrasonic Imaging and Nonlinear Beamforming Using Nulls

3:40 PM - 4:00 PM

Speaker: Michael Oelze, University of Illinois Urbana-Champaign

2:00 PM - 4:00 PM

2.3.6: Structure and Mechanics of Living and Bioinspired Materials

Location: STEW 214A

Moderators: Jingjie Yeo

Ultrastructural and Nanomechanical Alterations in Human Aortic Tissue Associated with Aneurysm and Calcification

2:00 PM - 2:20 PM

Speaker: Meisam Asgari, University of South Florida

Multilayer Biomechanical Modeling of the Human Appendix: Mechanics of Inflammation-Driven Diseases Progression

2:20 PM - 2:40 PM

Speaker: Redowan Ahmed Niloy, University of Notre Dame

Biophysical Modeling of Anatomically Realistic Prenatal Cortical Folding Development

2:40 PM - 3:00 PM

Speaker: Xianqiao Wang, University of Georgia

Enhancing Synthetic Peptides with Cell Binding Epitopes for Exfoliation of Mos2

3:00 PM - 3:20 PM

Speaker: Wade Cornell, University of Central Florida

2:00 PM - 4:00 PM

2.5.6: Cell Mechanics and Mechanobiology

Location: STEW 214B

Moderators: Shiva Rudraraju, Harshavardhan Kalathur

Mechanobiology of Car T-Cell Migration in 3D Tumor Microenvironments

2:00 PM - 2:20 PM

Speaker: Ahmadreza Kashefi, University of Illinois Urbana-Champaign

Osmotic Attenuation of Mechanotransduction: Reversing the Myofibroblast Phenotype through Biophysical Uncoupling

2:20 PM - 2:40 PM

Speaker: Yin-Yuan Huang, Washington University in St. Louis

Controlled Release Kinetics of Bacteria from Hydrogels for Therapeutic Applications

2:40 PM - 3:00 PM

Speaker: Akhiri Zannat, Michigan State University

Cell Adhesion State Regulates TRPA1-Mediated Ultrasound Responsiveness in Sonogenetics

3:00 PM - 3:20 PM

Speaker: Lisa Mitsuda, Tokyo University of Agriculture and Technology

Sonopin Enables Precise, Noninvasive, and Efficient Intracellular Delivery of Protacs

3:20 PM - 3:40 PM

Speaker: Yuqi Wu, Duke university

2:00 PM - 4:00 PM

3.2.3: Leveraging Entanglement to Enhance the Multi-physical Properties of Networked Materials Across Scales

Location: STEW 214C

Moderators: Hamed Hatami-Marbini

Barbed and Branched Particles for Optimum Entanglement and Strength: Monte Carlo Simulations and Experiments

2:00 PM - 2:20 PM

Speaker: Youhan Sohn, University of Colorado Boulder

Experimentally Informed Calibration of Flow Potential for Hybrid Woven Composite Materials

2:20 PM - 2:40 PM

Speaker: Ashraf Bastawros, Iowa State University

Harnessing Phase Separation and Solvation to Engineer Robust, Stretchable Gels

2:40 PM - 3:00 PM

Speaker: Jiazheng Bao, The University of Texas at Austin

Multiscale Mechanics of Metal Nanowire Network Based Stretchable Electronics

3:00 PM - 3:20 PM

Speaker: Yong Zhu, NC State University

2:00 PM - 4:00 PM

3.1.1: Composites R&D and Education Using Generative AI and LLM

Location: STEW 214D

Moderators: Wenbin Yu

Vibe Simulation of Composite Structures and Materials in the Age of AI

2:00 PM - 2:20 PM

Speaker: Wenbin Yu, Purdue

Harnessing AI Tools for Composites Research and Education

2:20 PM - 2:40 PM

Speaker: K.t. Tan, The University of Akron

Mechanics of Structure Genome-Based Multiscale Modelling for Cfrp Composite Repair with Experimental Validation

2:40 PM - 3:00 PM

Speaker: Sd Jacob Muthu, University of Regina

Model-Based Iterative Design Optimization of an Fdm-Printed Educational Apparatus

3:00 PM - 3:20 PM

Speaker: Jonathan Liu, OpenApparatus

AI-Assisted Prediction and Interpretation of Compression-After-Impact Strength from C-Scan Images in Composites

3:20 PM - 3:40 PM

Speaker: Jason Mack, The University of Akron

2:00 PM - 4:00 PM

3.6.2: AI Powered Inverse Design for Next Generation Composites

Location: STEW 218A

2:00 PM - 4:00 PM

2:00 PM - 4:00 PM

Moderators: Gang Li

AI-Assisted Blade Design for Composite Cross-Section Modeling and Optimization

2:00 PM - 2:20 PM

Speaker: Su Tian, AnalySwift LLC

Intelligent Multiphysics Inverse Design and Fabrication-Aware Topology Optimization for Nanophotonic Devices

2:20 PM - 2:40 PM

Speaker: Fariha Haque, The Ohio State University

AI-Enabled Inverse Process Design for Warpage

Minimization in Injection-Molded Short-Fiber Composites

2:40 PM - 3:00 PM

Speaker: Dhanashree Shinde, University of Delaware

A Machine Learning Based Process Optimization Approach to Composite Manufacturing Based on Vacuum-Assisted Resin Infusion Molding

3:00 PM - 3:20 PM

Speaker: Sahil Kamath, The University of Texas at Dallas

3.8.6: Programmable Morphing Matter: Bridging Bioinspiration, Mechanics, and Autonomous Design

Location: STEW 218B

Moderators: Lining Yao

Soft Textile-Based Systems for Energy Harvesting from the Human Body

2:00 PM - 2:20 PM

Speaker: Daniel John Preston, Rice University

Entangled Architectures as a Route to Programmable Morphing Matter

2:20 PM - 2:40 PM

Speaker: Wenjie Zhou, University of Illinois Urbana-Champaign

Armadillo-Inspired Active Morphing Skeletons for Soft Machines

2:40 PM - 3:00 PM

Speaker: Jianyu Zhou, North Carolina State University

Programming Deformations in Mechanical Networks via Contrastive Local Learning

3:00 PM - 3:20 PM

Speaker: Pratyaya Bhattacharya, University of Pennsylvania

From Clicking to Counting: Programming Folding Sequences in Origami Sheets with Bistable Buckled Hinges

3:20 PM - 3:40 PM

Speaker: Leon Kamp, Harvard University

4.1.3: Liquid Crystal Elastomers: Integrating the Mechanics of Liquid Crystals and Polymer Networks for Programmable Stimuli-responsive Materials

Location: STEW 218C

Moderators: Vicky Nguyen

Minimal-Surface Shells of Cholesteric Liquid Crystal Elastomers on Cellular Architectures for Enhanced Fatigue and Impact Resilience

2:00 PM - 2:20 PM

Speaker: Shu Yang, University of Pennsylvania

Multiscale Manufacturing of Adaptable 3D Architectures

2:20 PM - 2:40 PM

Speaker: Drew Melchert, Lawrence Livermore National Laboratory

Robotic Conformal 4D Printing of Liquid Crystal Elastomers

2:40 PM - 3:00 PM

Speaker: Kai Yu, University of Colorado Denver

Thermal Programmable Behavior of Zigzag Patterned Architected Liquid Crystal Elastomers

2:00 PM - 4:00 PM

2:00 PM - 4:00 PM

2:00 PM - 4:00 PM

3:00 PM - 3:20 PM

Speaker: Yue Wang, University of Houston

Mesogen Ordering and Dynamics in Liquid Crystal Elastomers in Tension

3:20 PM - 3:40 PM

Speaker: Sahar Riazzi Tabrizi, Oklahoma State University

Soft Elasticity, Viscoelasticity, and Mesogenic Orientation in Liquid Crystal Elastomers

3:40 PM - 4:00 PM

Speaker: Aurelie Azoug, Mechanics of Smart and Soft Materials lab

4.4.3: Controlling Mechanical Waves with Metamaterials

Location: STEW 218D

Moderators: Charles Dorn

Attempts at Passive Flow Control via Engineered Dynamics from Elastic Metamaterials

2:00 PM - 2:20 PM

Speaker: Abigail Juhl, Wright-Patterson Air Force Base, OH 45433 USA

Acoustic Phononic Subsurfaces for Flow Manipulation

2:20 PM - 2:40 PM

Speaker: Carson Willey, AFRL/AV

A Behavioral Framework to Design Phononic Materials for Effective Fluid-Structure Interactions

2:40 PM - 3:00 PM

Speaker: Kathryn H. Matlack, University of Illinois Urbana-Champaign

Inverse Design of Bandgaps in Tensegrity Structures with Resonators

3:00 PM - 3:20 PM

Speaker: Rawad Yazbeck, College Station

3.7.6: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Jie Yin

Understanding Tunable Shell Adhesion for Compliant Manipulation

2:00 PM - 2:20 PM

Speaker: Wanliang Shan, Syracuse University

Stick, Switch, Go: Programmable Adhesion for Soft Robots

2:20 PM - 2:40 PM

Speaker: Michael D. Bartlett, Virginia Tech, Soft Materials and Structures Lab

Emg-Controlled Soft Robotic Fingertips with Adaptive Friction for Enhanced Prosthetic Grasp Stability

2:40 PM - 3:00 PM

Speaker: Haoze Sun, North Carolina State university

4.2.6: Advances on the Mechanics of Architected Materials

Location: STEW 279

Moderators: Tian Chen

Strain-Induced Tuning of Ultrasound in Microscale Acoustic Metamaterials

2:00 PM - 2:20 PM

Speaker: Rachel Sun, Massachusetts Institute of Technology

Wave Localization and Transmission in Quasicrystalline Mechanical Metamaterials

2:20 PM - 2:40 PM

Speaker: Weidi Wang, University of Massachusetts

Dynamic Mechanical Response of Spinodal Architectures Across Length and Time Scales

2:40 PM - 3:00 PM

Speaker: Rishi Kommalapati, Massachusetts Institute of Technology

2:00 PM - 4:00 PM

**Boundary-Induced Size Effects in Finite Cellular Lattices:
Rotational Constraints as a Design Variable**

3:00 PM - 3:20 PM

Speaker: Gouripriya Sivasubramonian, Mahindra University

**Vibration-Assisted Fabrication of Structures with Spatially
Distributed Features**

3:20 PM - 3:40 PM

Speaker: Tian Chen, Imperial College London

**Living Mechanical Metamaterials Exhibiting an Inverse-
Ashby Stiffness–Density Regime and Electromechanical
Response**

3:40 PM - 4:00 PM

Speaker: Wenxuan Meng, University of Pittsburgh

**2.6.6: Experimental and Computational Methods in
Mechanobiology and Biomaterial Innovation**

Location: STEW 310

Moderators: Hanxun Jin, Farid Alisafaei

**Sequence-Controlled Interdomain Interactions Tune
Mechanical Properties of Muscle-Inspired Fibers**

2:00 PM - 2:20 PM

Speaker: Qingyue Guo, Northwestern University

**Mechanical Behavior of Individual In-Vitro Mineralized
Mammalian Collagen Fibrils**

2:20 PM - 2:40 PM

Speaker: Kathiresan Karunakaran, Aerospace Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801

**A Data-Driven Constitutive Model for Damage-Induced
Anisotropy**

2:40 PM - 3:00 PM

Speaker: Amirhossein Amiri-Hezaveh, Columbia University

**Viscoelastic Characterization of Brain Ecm-Mimetic
Hydrogels**

3:00 PM - 3:20 PM

Speaker: Ozge Ece Aydogan, The University of Texas at Arlington

2:00 PM - 4:00 PM

4.6.1: Structural Materials in Nuclear Environments

Location: STEW 311

Moderators: Cheng Sun, Yifan Zhang, Ke Xu

**Mechanisms-Based Creep-Fatigue Analysis of Alloy 617 for
Advanced High-Temperature Nuclear Applications**

2:00 PM - 2:20 PM

Speaker: James Stubbins, Plasma and Radiological Engineering, University of Illinois at Urbana-Champaign

In Situ TEM Irradiation Studies of Nanostructured Metals

2:20 PM - 2:40 PM

Speaker: Yinghang Liu, Purdue University

**Dynamic Formation of Nanoscale Planar Defects and Phases
for Deformation Homogenization in Extreme Environments**

2:40 PM - 3:00 PM

Speaker: Jean-Charles Stinville, University of Illinois at Urbana-Champaign

Mechanical Testing during Displacement Events

3:00 PM - 3:20 PM

Speaker: Khalid Hattar, University of Tennessee

**Radiation Tolerance of Additively Manufactured Grx-810 for
Advanced Nuclear Energy Applications**

3:20 PM - 3:40 PM

Speaker: Hyosim Kim, Los Alamos National Laboratory

**Mechanistic Understanding of Sic Corrosion Degradation in
Nuclear Reactor Environments**

3:40 PM - 4:00 PM

Speaker: Jianqi Xi, University of Illinois Urbana-Champaign

2:00 PM - 4:00 PM

1.2.3: Eringen Medal Symposium in Honor of Vijay Kumar

Location: STEW 313

Moderators: Nora Ayanian

Proactive Robot Control in Collaborative Manipulation Tasks

2:00 PM - 2:20 PM

Speaker: Milos Zefran, University of California

Resilient Multi-Robot Autonomy: Bridging Physical Interaction and Safe Coordination

2:20 PM - 2:40 PM

Speaker: Nora Ayanian, Brown University

Flight, Force, and Form: Rethinking Robotics through Physical Interaction

2:40 PM - 3:00 PM

Speaker: David Saldaña, Lehigh University

From Perception to Social Connection: Toward Meaningful Presence in Augmented Reality

3:00 PM - 3:20 PM

Speaker: Nilanjan Sarkar, Vanderbilt University

What Does a Robot Need to Know? Context-Aware Robotic Intelligence

3:20 PM - 3:40 PM

Speaker: Philip Dames, Temple University

2:00 PM - 4:00 PM

1.3.6: Y. Huang Engineering Science Medalist Symposium in Honor of Dimitris C. Lagoudas: Smart and Multifunctional Materials

Location: STEW 314

Moderators: Bjoern Kiefer

Impact Resistant Biological and Bioinspired Materials

2:00 PM - 2:20 PM

Speaker: Iwona Jasiuk, University of Illinois Urbana-Champaign

Nucleation of Cracks in Soft Materials

2:20 PM - 2:40 PM

Speaker: Krishnaswamy Ravi-Chandar, The University of Texas at Austin

Constitutive and Damage Response of Pdcpd under Hypervelocity Impact

2:40 PM - 3:00 PM

Speaker: Ioannis Chasiotis, University of Illinois at Urbana-Champaign

Geometric Phase-Field Formulation for Porous-Ductile Fracture and Hydrogen-Induced Embrittlement

3:00 PM - 3:20 PM

Speaker: Theodoros Baxevanis, University of Houston

Multiscale Strain and Damage Sensing in Nanocomposite Bonded Energetic Materials

3:20 PM - 3:40 PM

Speaker: Gary Seidel, Virginia Tech

2:00 PM - 4:00 PM

1.7.6: Structural Changes in Materials at Normal and Extreme Conditions: A Symposium in Honor of the 70th Birthday of Prof. Valery Levitas

Location: STEW 320

Moderators: Ashraf Bastawros

Hybrid Data-Driven Constitutive Modeling Framework for Shape Memory Alloys

2:00 PM - 2:20 PM

Speaker: Dimitris Lagoudas, Texas A&M University

Integrating Coarse-Grained Modeling and Machine Learning for Predicting Structural Behavior of Complex Polymer Materials

2:20 PM - 2:40 PM

Speaker: Wenjie Xia, Iowa State University

2:00 PM - 4:00 PM

2:00 PM - 4:00 PM

2:00 PM - 4:00 PM

Electro-Viscoelasticity of Charged Polymer Chains: A Multiscale Approach

2:40 PM - 3:00 PM

Speaker: Zachary Wolfgram, University of Illinois Urbana-Champaign

Activating Mobile Dislocation in Boron Carbide via AI Doping

3:00 PM - 3:20 PM

Speaker: Qi An, Iowa State University

6.5.3: Computational Modeling of Physiological Flows

Location: RAWLS 1011

Moderators: Dongjie (Fred) Jia

Temporal Super-Resolution of 4D Flow Mri Using an Empirical Temporal Model

2:00 PM - 2:20 PM

Speaker: Mohammadreza Balouchestani, Purdue University

3D Shear Stress Characteristics in New Blood Vessel Sprouts Using Red Blood Cell-Resolved Simulations

2:20 PM - 2:40 PM

Speaker: Peter Balogh, New Jersey Institute of Technology

Frequency-Domain Computational Hemodynamics

2:40 PM - 3:00 PM

Speaker: Dongjie Jia, Purdue University

A Physics-Based Immersed Framework for Drug Delivery and Adhesion in Complex Arterial Geometries

3:00 PM - 3:20 PM

Speaker: Sitanan Tainpakdipat, University of Illinois Urbana Champaign

7.1.6: Scientific Machine Learning for Computational Mechanics

Location: RAWLS 1057

Moderators: Yang Xu

Investigating Flow Channeling in Reactive Transport through Porous Media Using a Learning-Based Multiscale Model

2:00 PM - 2:20 PM

Speaker: Maximo Cravero, California Institute of Technology

Discovery of Neutrophil Self-Limit Swarming Using Bayesian Physics-Informed Neural Network

2:20 PM - 2:40 PM

Speaker: Xincheng Wang, University of Notre Dame

A Comprehensive Comparison of Neural Operators for 3D Industry-Scale Engineering Designs

2:40 PM - 3:00 PM

Speaker: Hadi Meidani, University of Illinois at Urbana-Champaign

Accelerating Biventricular Cardiac Mechanics with Graph Neural Networks

3:00 PM - 3:20 PM

Speaker: Nanlong Sun, Kennesaw State University

A Continuum Physics-Based Approach to Flow Matching

3:20 PM - 3:40 PM

Speaker: Krishna Garikipati, UNIVERSITY OF SOUTHERN CALIFORNIA

7.12.6: Coupled Mechanics of Soft Solids

Location: RAWLS 1062

Moderators: Keven Alkhoury, Shawn A. Chester

Toward Inverse Characterization of Mechanically Graded Soft Materials with Cavitation Rheometry

2:00 PM - 2:20 PM

Speaker: Zhiren Zhu, University of Michigan

Abaqus Implementation of a Large-Deformation Gradient

2:00 PM - 4:00 PM

Damage Theory for Fracture

2:20 PM - 2:40 PM

Speaker: Keven Alkhoury, Brown University

Why Stretching Slows Curing: A Statistical-Mechanics-Based Continuum Theory

2:40 PM - 3:00 PM

Speaker: Joseph Bonavia, Massachusetts Institute of Technology

Strain Rate and Temperature Dependence on the Behavior of Viscoelastomers

3:00 PM - 3:20 PM

Speaker: Danial Cheraghali, New Jersey Institute of Technology

Fracture of Semi-Crystalline Polymers in Hydrocarbon Environment

3:20 PM - 3:40 PM

Speaker: Deepro Ghosh, Brown University

7.8.3: Advances in Experimental Mechanics: New methods, Instrumentation, and Data Driven Discovery

Location: RAWLS 1071

Moderators: Angkur Shaikeea, Adeline Wihardja

Mechanical Characterization of Thin Films via High-Throughput Membrane Deflection Experiments

2:00 PM - 2:20 PM

Speaker: Gi-Dong Sim, Korea Advanced Institute of Science and Technology

High-Temperature Fatigue Strength Degradation in Freestanding Ni Thin Films Revealed by Joule-Heated Micro-Scale Mechanical Testing

2:20 PM - 2:40 PM

Speaker: Junghun Park, Korea Advanced Institute of Science and Technology (KAIST)

Full Field Stress-Strain Measurements in Metamaterials

2:40 PM - 3:00 PM

Speaker: Rosan Naik, California Institute of Technology

Cnn-Based Inverse Reconstruction of Thin-Film Tensile Behavior from Membrane Deflection Experiments

3:00 PM - 3:20 PM

Speaker: Hyeonwoo Ju, Jeonbuk National University

Boundary-Controlled Universal Testing Machine for the Multiaxial Characterization of Thin Laminates

3:20 PM - 3:40 PM

Speaker: Afonso Mesquita, California Institute of Technology

An Experimental Pipeline for Full-Field Indentation Microscopy (Fim): Toward Single-Test Quantification of Anisotropy and Nonlinearity

3:40 PM - 4:00 PM

Speaker: Nathan T. Scriba, University of Illinois at Urbana Champaign

2:00 PM - 4:00 PM

6.3.2: Electrohydrodynamics

Location: RAWLS 1086

Moderators: Osman Basaran, Ajay Kumar

Electrohydrodynamics of Oblate Droplets & Equatorial Streaming

2:00 PM - 2:20 PM

Speaker: Brayden Wagoner, Los Alamos National Laboratory

Finite-Time Singularity Formation in the Taylor-Melcher Leaky Dielectric Model

2:20 PM - 2:40 PM

Speaker: Michael Siegel, New Jersey Institute of Technology

Dynamics of Electrohydrodynamic Emulsions

2:40 PM - 3:00 PM

Speaker: Aditya Khair, Carnegie Mellon University

Electrified Drops at Nanometer Sizes

2:00 PM - 4:00 PM

3:00 PM - 3:20 PM

Speaker: Juan Fernandez De La Mora, Yale University

Dynamics of a Deformable Biomimetic Membrane Driven by an Applied Uniform Dc Electric Field

3:20 PM - 3:40 PM

Speaker: Michael Miksis, Northwestern University

An Adaptive, High-Order Numerical Method for 3D Interfacial Electrohydrodynamics

3:40 PM - 4:00 PM

Speaker: Travis Askham, New Jersey Institute of Technology

5.3.6: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

From Architected Lattices to Adaptive Metamaterials for Multifunctional Acoustic Systems

2:00 PM - 2:20 PM

Speaker: Wei Zhai, National University of Singapore

3D Architected Instability-Based Metamaterials (Aims) Enabled by Crystal-Lattice Design, Surrogate Modeling, and Microfabrication

2:20 PM - 2:40 PM

Speaker: Li Wan, The University of Texas at Austin

Networks of Buckled Beams for Morphing Meta-Materials

2:40 PM - 3:00 PM

Speaker: Edward Beck, Carnegie Mellon University

Tuning Multistability in Architected Instability-Based Metamaterials through an Analytical Model

3:00 PM - 3:20 PM

Speaker: Chaisiri Okoun, Architectural and Environmental Engineering, The University of Texas at Austin, Austin 78712

Challenges and Opportunities in Designing Stimulus-Responsive Architected Materials with High Work Capacity

3:20 PM - 3:40 PM

Speaker: Haohuan Xu, Purdue University

2:00 PM - 4:00 PM

5.1.3: Mechanics of Interfaces: Deformation, Adhesion, Fracture, and Friction

Location: KRAN G010

Moderators: Ruobing Bai

Adhesion Arises from Interfacial Strength: Peeling Speed and Temperature Dependencies*

2:00 PM - 2:20 PM

Speaker: Zhe Cui, University of Akron

Strong Adhesives Produce Speed Dependence in Jkr Tests*

2:20 PM - 2:40 PM

Speaker: Tianji Pang, University of Akron

Rate-Dependent Detachment Mechanisms in Viscoelastic Adhesive Contacts

2:40 PM - 3:00 PM

Speaker: Kyobeom Ku, University of Wisconsin-Madison

Water-Driven Ridge Formation in Wrinkled Film-Substrate Bilayers

3:00 PM - 3:20 PM

Speaker: Seita Ueno, Nagoya University

Structure Sensitivity in Soft Architected Adhesion

3:20 PM - 3:40 PM

Speaker: Zumrat Usmanova, Northeastern University

Programming Directional Adhesion in Soft Elastomers via Architected Wavy Interfaces

3:40 PM - 4:00 PM

Speaker: Denizhan Yavas, Rice University

2:00 PM - 4:00 PM

5.6.3: Computational Fracture Mechanics Across Materials and Length Scales

Location: KRAN G012

Moderators: Ravindra Duddu

Strength-Controlled Crack Nucleation in Phase-Field Fracture Models

2:00 PM - 2:20 PM

Speaker: Lampros Svolos, University of Vermont

The Single-Edge Notch Fracture Test for Viscoelastic Elastomers

2:20 PM - 2:40 PM

Speaker: Farhad Kamarej, University of Illinois Urbana-Champaign

On the Phase-Field Modeling of Dynamic Fracture

2:40 PM - 3:00 PM

Speaker: Umar Khayaz, Georgia Institute of Technology

A Stochastic Approach to Fracture Toughness in Phase-Field Fracture Modelling

3:00 PM - 3:20 PM

Speaker: Miguel Fernandez, Illinois State University

Peridynamic Simulation of Fracture in Nuclear Graphite

3:20 PM - 3:40 PM

Speaker: Erdogan Madenci, University of Arizona

2:00 PM - 4:00 PM

5.5.6: Mechanics of Failure in Network Materials

Location: KRAN G018

Moderators: Zhaohan Yu, Kyungmi Na

Opto-Charge Microscopy (OCM): Resolving Particle Dynamics in Electrochemical Network Materials

2:00 PM - 2:20 PM

Speaker: Kejie Zhao, Purdue University

An Elastocaloric Polymer with Ultra-high Solid-state Cooling via Defect Engineering

2:20 PM - 2:40 PM

Speaker: Zhaohan Yu, Michigan State University

Acoustic Cavitation Controls Polymerization Kinetics in Highly Entangled Polymer Networks

2:40 PM - 3:00 PM

Speaker: Gun Kim, Nanyang Technological University

Light-Printable Jammed Microsphere-Reinforced Elastomers with Exceptional Fracture Toughness and Intrinsic Echogenicity

3:00 PM - 3:20 PM

Speaker: Oliyad Dibisa, University of Wisconsin-Madison - Madison

Modeling the Pure-Shear Fracture Tests of Liquid Crystal Elastomers

3:20 PM - 3:40 PM

Speaker: Yuefeng Jiang, Johns Hopkins University

Physics-Informed Machine Learning for Constitutive Modeling of Anisotropic Damage in Polymeric Networks

3:40 PM - 4:00 PM

Speaker: Qiang Guo, University of Colorado Colorado Springs

2:00 PM - 4:00 PM

5.7.6: Mechanics of Damage, Fracture and Friction in Materials Across Scales

Location: KRAN G020

Moderators: Ahmed Elbanna

Exploring New Approaches to Ductile Fracture through New Experiments, Models, and Methods

2:00 PM - 2:40 PM

Speaker: James Foulk III, Sandia National Laboratories

Interplay between Chemical and Mechanical Rates Dictates

4:00 PM - 4:30 PM

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

Whether Gaseous Impurities Mitigate Hydrogen Embrittlement

2:40 PM - 3:20 PM

Speaker: Kshitij Vijayvargia, University of Illinois Urbana-Champaign

Understanding the Structure of Fracture Mechanics: The Example of Elastomeric Fracture*

3:20 PM - 4:00 PM

Speaker: Shi-Qing Wang, University of Akron

BREAK | Hospitality Rooms: STEW 302/306 & Rawls Atrium

1.4.2: SES Honorary Symposium

Location: STEW 202

Moderators: Yong Zhu, Sinan Keten

A Journey from Instability-Driven Origami Robot to Life-Saving Technology

4:30 PM - 5:10 PM

Speaker: Renee Zhao, Stanford University

An Integrated Design-To-Manufacturing Approach for Multifunctional Materials

5:10 PM - 5:50 PM

Speaker: Shelly Zhang, University of Illinois

2.2.4: Biomechanics and Biomimetics Across Time and Length Scales

Location: STEW 204

Moderators: Callan Luetkemeyer, Ottman Tertuliano

High-Frequency Ultrasound Reveals Regional Hemodynamic Differences in Murine Thoracic and Abdominal Aortic Aneurysms

4:30 PM - 4:50 PM

Speaker: Cortland Johns, Purdue University

Regional Ventricular Mechanics in Hypoplastic Left Heart Syndrome: A 4D Cmr-Based Strain Analysis Framework for Functional Phenotyping

4:50 PM - 5:10 PM

Speaker: Patrick Giolando, Purdue University

Eeg-Based Detection of Deformation in Brain-Tissue-Like Materials

5:10 PM - 5:30 PM

Speaker: Nafisa Ibnat Tasfee, The University of Texas at Arlington

AI-Enabled Dynamic Echocardiography Reveals Reduced Aortic Root Circumferential Strain in Pediatric Marfan Syndrome

5:30 PM - 5:50 PM

Speaker: Shubh Mehta, Purdue University

2.9.7: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Junfei Li

Validation of a 3D Frequency-Domain Model-Based Method for Fast Transcranial Photoacoustic Imaging

4:30 PM - 4:50 PM

Speaker: Yun Jing, Penn State University

Metamaterial-Assisted Acoustic Manipulation of Large Objects in Water

4:50 PM - 5:10 PM

Speaker: Chu Ma, University of Wisconsin-Madison

Cavity-Trapped Acoustic Bubbles for Bioacoustic Lab-On-A-Chip: From Fundamental Mechanisms to Cardiovascular and Oncology Applications

5:10 PM - 5:30 PM

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

Speaker: Jie Xu, University of Illinois Chicago

A New Era of Microvascular Imaging with Super-Resolution Ultrasound

5:30 PM - 5:50 PM

Speaker: Pengfei Song, Duke University

A Multiscale Computational Framework for Acoustic Streaming

5:50 PM - 6:10 PM

Speaker: Nitesh Nama, University of Nebraska-Lincoln

2.8.1: From Nerves to Nanomaterials: Mechanics of Super Soft Porous Materials

Location: STEW 214A

Moderators: Arina Korneva

Macromolecular Infiltration Influences Cartilage Poroelastic Mechanical Properties

4:30 PM - 5:10 PM

Speaker: Mark Buckley, University of Rochester

A Sensitivity Analysis of Solute Transport through Permeable Pathways in the Brain

5:10 PM - 5:30 PM

Speaker: Keelin Quirk, University of Rochester

On the Interface Conditions for Pure Fluid/Poroelastic Solid Interaction

5:30 PM - 5:50 PM

Speaker: Mohammad Jannesari, University Park

Mechanical Control of Astrocyte Neurotoxicity under Inflammation

5:50 PM - 6:10 PM

Speaker: Miao Huang, University of Illinois Urbana-Champaign

2.7.1: Biomechanics of Morphogenesis

Location: STEW 214B

Moderators: Daniel Suter

A Simple Active Fluid Model Unites the Evolution of Cytokinesis, Cell Crawling, and Axonal Outgrowth

4:30 PM - 5:10 PM

Speaker: Kyle Miller, Michigan State University

Multiple Microtubule-Patterned Cell Wall Properties Drive Polarity Establishment and Long-Term Cell Diameter Control in Cotton Fibers

5:10 PM - 5:50 PM

Speaker: Daniel Szymanski, Purdue University

An Optimal Substrate Stiffness for Efficient Neurite Growth

5:50 PM - 6:10 PM

Speaker: Laura Pulido Cifuentes, Purdue University West Lafayette

3.2.4: Mechanics of Fibrous Materials: From Structure to Function

Location: STEW 214C

Moderators: Hamed Hatami-Marbini

Designing Polydisperse Polymer Networks with Targeted Properties via Cross-Link Micromechanics and Statistics

4:30 PM - 4:50 PM

Speaker: Matthew Grasinger, Air Force Research Laboratory

Designing Fiber Networks for Energy Storage and Dissipation through Multi-Material 3D Printing of Viscoelastic Polymers

4:50 PM - 5:10 PM

Speaker: Beijun Shen, Columbia University

Enhancing the Strength Characteristics of 3D Printed Composites through Simultaneous Printing of Continuous

4:30 PM - 6:10 PM

and Discontinuous Fiber Reinforced Thermoplastics.

5:10 PM - 5:30 PM

Speaker: Mohammed Abir Mahdi, Purdue University

**Tailoring Graded Foams for Impact Protection: A
Compaction Shock Perspective**

5:30 PM - 5:50 PM

Speaker: Bhanugoban Maheswaran, University of Wisconsin-Madison

**Nanostructure Formation and Mechanical Properties of
Pyrolyzed Carbyne**

5:50 PM - 6:10 PM

Speaker: Abigail Eaton, Air Force Institute of Technology

**3.3.1: Mechanics-driven Design and Manufacturing for
Metamaterials and Soft Actuators**

Location: STEW 218A

Moderators: Connor David Armstrong, Shaoting Lin

**Frequency-Selective Control of Modular Structures: A
Mechanical Phone Call**

4:30 PM - 4:50 PM

Speaker: Xinyi Yang, Georgia Institute of Technology

**Non-Linear Mechanics of Hard-Soft Morphing Structures
Inspired from Fish Fin Rays**

4:50 PM - 5:10 PM

Speaker: Prashant Kunjam, University of Colorado Boulder

**Geometry-Controlled Deployment Energy in Folding-Wall
Tension-Activated Kirigami**

5:10 PM - 5:30 PM

Speaker: Yeongeun Ki, Purdue University

**Multimodal Knot Metamaterials: Harnessing Topology and
Snapping for Autonomous Soft Systems**

5:30 PM - 5:50 PM

Speaker: Yaoye Hong, North Carolina State University

**Multifunctional Modular Soft Metamaterials via Topology
Optimization Design**

5:50 PM - 6:10 PM

Speaker: Weiyun Xu, University of Illinois Urbana-Champaign

4:30 PM - 6:10 PM

**3.8.7: Programmable Morphing Matter: Bridging
Bioinspiration, Mechanics, and Autonomous Design**

Location: STEW 218B

Moderators: Lining Yao

**Monolithic Pneumatic Miura-Origami with Tunable Stiffness
via Grayscale Dlp Fabrication**

4:30 PM - 4:50 PM

Speaker: Yuyang Song, Toyota Research Institute of North America

**Part, Path, Plan: Partitive Geometry for Multi-Robot
Cooperative Additive Manufacturing**

4:50 PM - 5:10 PM

Speaker: Ronnie Stone, The University of Texas at Austin

Layerless Grayscale Hydrogel Fabrication

5:10 PM - 5:30 PM

Speaker: Joseph Beckett, University of Michigan

Autonomous Folding of Soft Matter from Living Polymers

5:30 PM - 5:50 PM

Speaker: Tuo Zhao, Princeton University

**Digitally Reprogrammable Solid-Liquid Composites for Soft
Robotic Matter**

5:50 PM - 6:10 PM

Speaker: Yang Weng, Duke University

4:30 PM - 6:10 PM

**4.1.4: Liquid Crystal Elastomers: Integrating the
Mechanics of Liquid Crystals and Polymer Networks for**

Programmable Stimuli-responsive Materials

Location: STEW 218C

Moderators: Tim White

Programming Mechano-Optical and Opto-Mechanical Responses in Liquid Crystal Elastomers for Soft Sensors and Actuators

4:30 PM - 4:50 PM

Speaker: Ryan Truby, Northwestern University

Ultrasoft Dispersed Liquid Crystal Elastomers with Programmable, Reversible Mechanoresponsive Optical Transitions

4:50 PM - 5:10 PM

Speaker: Alec Lucas, Northwestern University

Tunable Spiropyran Activation Strain for Programmable Mechanochromism in Direct-Ink-Written Monolithic Liquid Crystal Elastomers

5:10 PM - 5:30 PM

Speaker: Kyeong-Wan Kim, Pusan National University

Liquid Crystal Elastomer-Driven Focus-Tunable Lens

5:30 PM - 5:50 PM

Speaker: Hyeon Ji Seok, Pusan National University

Reshaping Liquid Crystal Elastomers with Light

5:50 PM - 6:10 PM

Speaker: John S Biggins, University of Cambridge

4:30 PM - 6:10 PM

4.4.4: Controlling Mechanical Waves with Metamaterials

Location: STEW 218D

Moderators: Junfei Li

Novel Seismic Metamaterials with Programmable Multi-Stable Microstructures for Wide-Band Structural Response Attenuation

4:30 PM - 4:50 PM

Speaker: Chanhun Park, Purdue University

Hierarchical Transition Waves in Mechanical Metamaterial

4:50 PM - 5:10 PM

Speaker: Michael Frazier, University of California San Diego

Managing Impact Energy Using Micro-Architectures in All Brittle Systems

5:10 PM - 5:30 PM

Speaker: Bright Asante, University of Colorado Boulder

4:30 PM - 6:10 PM

3.7.7: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Dan Preston

Agile and Robust Micro-Aerial-Robots Powered by Soft Artificial Muscles

4:30 PM - 4:50 PM

Speaker: Kevin Chen, Massachusetts Institute of Technology

Bioinspired Soft Endoscopic Robot for Locomotion, Steering, and Intervention in Porcine Intestine Studies

4:50 PM - 5:10 PM

Speaker: Binbin Ying, UT Southwestern Medical Center

Bioinspired Soft Robot for Active Intravesical Liquid Delivery and Mixing

5:10 PM - 5:30 PM

Speaker: Xiaoguang Dong, Vanderbilt University

Scalable Soft Actuators via Coaxial Dielectric Elastomer Fibers with Liquid Electrodes

5:30 PM - 5:50 PM

Speaker: Emmy Markgraf, Materials Science and Engineering, Northwestern University

Hidden Payload Inference from Compliant Robot Ringdown

4:30 PM - 6:10 PM

Dynamics via Physical Reservoir Computing

5:50 PM - 6:10 PM

Speaker: Wen Sin Lor, Virginia Tech

4.2.7: Advances on the Mechanics of Architected Materials

Location: STEW 279

Moderators: Lucas Meza

Response Behavior Modality and Unitarity in Lattice Metamaterials for Intelligent Systems Design and Quantum Computing Simulation

4:30 PM - 4:50 PM

Speaker: Eduard Karpov, University of Illinois Chicago

Rate-Dependent Damage and Fracture in Additively Manufactured Tough Tpm's Lattices

4:50 PM - 5:10 PM

Speaker: Abhishek Gupta, Brown University

Characterization of Crack Initiation and Growth in Additively Manufactured Octahedral Lattice Structures Containing a Lattice-Level Crack

5:10 PM - 5:30 PM

Speaker: Polyvios Romanidis, University of Illinois Urbana-Champaign

Network Topology-Regulated Phase Separation and Mechanical Behavior

5:30 PM - 5:50 PM

Speaker: Zhenda He, Michigan State University

4:30 PM - 6:10 PM

2.6.7: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310

Moderators: Hanxun Jin, Farid Alisafaei

Strain and Strain Rate Threshold Estimation via Continuum Mechanics-Based Modeling for Traumatic Brain Injury Prediction

4:30 PM - 4:50 PM

Speaker: Haneesh Kesari, School of Engineering

Mechanics of Multicellular Living Systems: Reality and Virtual World

4:50 PM - 5:10 PM

Speaker: Haiqian Yang, MIT

Age and Gender-Dependent Group-Average Brain Biomechanics Models for Traumatic Brain Injury

5:10 PM - 5:30 PM

Speaker: Jiahao Wei, Johns Hopkins University

4:30 PM - 6:10 PM

4.6.2: Structural Materials in Nuclear Environments

Location: STEW 311

Moderators: Shuozhi Xu, Khaled Nabil SharafEldin

Composition–Microstructure–Irradiation Interactions in Additively Manufactured CoCrFeNi-Based High-Entropy Alloys

4:30 PM - 4:50 PM

Speaker: Shunyu Liu, Clemson University

Developing In-Situ Capabilities on Accelerators to Interrogate Radiation Damage

4:50 PM - 5:10 PM

Speaker: Yongqiang Wang, Los Alamos National Laboratory

Heat Treatment Effect on the Defect Evolution in AM 316H Stainless Steel

5:10 PM - 5:30 PM

Speaker: Wei-Ying Chen, Lemont IL

Plastic Deformation of Fe–Cr Alloys before and after

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

Irradiation: Insights from Discrete Dislocation Dynamics

5:30 PM - 5:50 PM

Speaker: Manikandan Muruganandam, Purdue University

The Interaction of Edge Dislocations with Hydrogen-Helium Bubbles in Tungsten

5:50 PM - 6:10 PM

Speaker: Safqut Sanwar, Clemson University

1.2.4: Eringen Medal Symposium in Honor of Vijay Kumar

Location: STEW 313

Moderators: Yonggang Huang

Shape Programmable 3D Mesostructures and Functional Devices

4:30 PM - 4:50 PM

Speaker: Yonggang Huang, Northwestern University

From Aerial to Marine Drones: Challenges and Opportunities

4:50 PM - 5:10 PM

Speaker: Bert Tanner, University of Delaware

P-Agbot: An Autonomous Mobile Robot for In-Row and Under-Canopy Monitoring and Physical Sampling

5:10 PM - 5:30 PM

Speaker: David Cappelleri, Purdue University

Wearable Robotics: How Robotics Can Impact Health

5:30 PM - 5:50 PM

Speaker: Thomas Sugar, Arizona State University

7.7.1: Data-driven Methods for Inelastic Solids and Structures

Location: STEW 314

Moderators: Burigede Liu

Data-Driven Heterogeneous Viscoelasticity: Identification, Prediction, and Design

4:30 PM - 4:50 PM

Speaker: {amir} Hossein Salahshoor, Duke University

Learning Viscoplastic Constitutive Relations from Experiments: Pde-Constrained Optimization

4:50 PM - 5:10 PM

Speaker: Andrew Akerson, Massachusetts Institute of Technology

Neural Operator Accelerated Atomistic to Continuum Concurrent Multiscale Simulations of Viscoelasticity

5:10 PM - 5:30 PM

Speaker: Swarnava Ghosh, Oak Ridge National laboratory

Physics-Based Regularization of Fe-Pinns: Generalization of Pinns as Surrogate Models for Nonlinear Elasticity Problems

5:30 PM - 5:50 PM

Speaker: Manish Vasoya, Rutgers University

Learning Constitutive Relations with Recurrent Neural Operators: From Synthetic Data to Experiment

5:50 PM - 6:10 PM

Speaker: Burigede Liu, University of Cambridge

6.5.4: Computational Modeling of Physiological Flows

Location: RAWLS 1011

Moderators: Sharun Kuhar

Automated Detection of Right Coronary Artery Stenosis via Retrograde Flow Analysis: A Deep Learning Approach

4:30 PM - 4:50 PM

Speaker: Jasmine Nguyen, Purdue University Northwest

Modeling the Effects of Anastomotic Flow on Wearable Thermal Sensing of Vascular Access

4:50 PM - 5:10 PM

Speaker: Zhaobang Hou, Northwestern University

4:30 PM - 6:10 PM

Linking Patient-Specific Hemodynamics to Vessel Wall Enhancement in Intracranial Aneurysms

5:10 PM - 5:30 PM

Speaker: Farshid Goudarzian, Purdue University

Computer Simulations of Chick Yolk Sac Interstitial Flow Reveal Organ-Scale Flow Patterns Driven by Segregated Leakage and Drainage

5:30 PM - 5:50 PM

Speaker: Adithya Srinivasan, Purdue University

Computational Modeling of a Chemofilter Device for Capture of Chemotherapeutic Drugs

5:50 PM - 6:10 PM

Speaker: Grace E. Palahnuk, Purdue University

7.2.1: Physics-Informed and Data-Driven Approaches to Coupled Multiphysics

Location: RAWLS 1057

Moderators: Siyuan Song

A Constitutive Framework for Spin-Lattice Coupling in Atomistic Magnetoelastic Simulations

4:30 PM - 4:50 PM

Speaker: Malcolm Jackson, MAE Dept, UCLA

Laser-Induced Acoustic Signal Generation for Non-Destructive Structural Health Evaluation through Lstm Network

4:50 PM - 5:10 PM

Speaker: Tanuj Gupta, Clemson University

Variational System Identification for Data-Driven Constitutive Model Discovery in Computational Mechanics

5:10 PM - 5:30 PM

Speaker: Siddhartha Srivastava, Auburn University

Calculating the Properties of Battery Cell Materials from Scratch

5:30 PM - 5:50 PM

Speaker: Louis Hector, General Motors Company

4:30 PM - 6:10 PM

7.4.1: Advances in Experimental Electro-Chemo-Mechanics

Location: RAWLS 1062

Moderators: Juner Zhu

Contact Loss in All Solid-State Li-Ion Batteries via Deposition of Impurities

4:30 PM - 5:10 PM

Speaker: Vikram Deshpande, Cambridge University

Analysis and Mitigation of Stress-Driven Lithium Penetration in Solid Electrolytes

5:10 PM - 5:50 PM

Speaker: Brian W Sheldon, Brown University

Visualizing Electro-Mechanical Coupling in Metal Anodes via Operando SEM and Digital Image Correlation

5:50 PM - 6:10 PM

Speaker: Lihong Zhao, University of Houston

4:30 PM - 6:10 PM

7.8.4: Advances in Experimental Mechanics: New methods, Instrumentation, and Data Driven Discovery

Location: RAWLS 1071

Moderators: Angkur Shaikeea, Adeline Wihardja

Machine Learning-Driven Creep Law Discovery Across Alloy Compositional Space

4:30 PM - 4:50 PM

Speaker: Hongshun Chen, Northwestern University

Mfinder: A Multi-Fidelity, Physics-Informed Framework for

4:30 PM - 6:10 PM

4:30 PM - 6:10 PM

Recovering and Denoising Incomplete Full-Field Kinematic Measurements

4:50 PM - 5:10 PM

Speaker: Kshitiz Upadhyay, University of Minnesota

Machine Learning Extraction of Nonlinear Elastic Behaviors from Displacement Field

5:10 PM - 5:30 PM

Speaker: Chenglin Wu, Texas A&M University

Optimal Experimental Design with Topology Optimization to Discover Constitutive Relations

5:30 PM - 5:50 PM

Speaker: Adeline Wihardja, California Institute of Technology

Hardware and Software Tomography Considerations on the Road to Sub-Micron Dvc Metrology

5:50 PM - 6:10 PM

Speaker: Alex Arzoumanidis, Psylotech, Inc.

6.3.3: Electrohydrodynamics

Location: RAWLS 1086

Moderators: Osman Basaran, Ajay Kumar

Electrified Matter at the Mesoscale: Dust, Drops, and Jumping Parasites

4:30 PM - 4:50 PM

Speaker: Justin Burton, Emory University

Deformation and Deflection: From Bubble Instability to Droplet Bouncing under Electric Fields

4:50 PM - 5:10 PM

Speaker: Sunghwan "sunny" Jung, Cornell University

Electrospray Ionization of Homopolymers: Indirect Structural Evidence of Chain Ejection Mechanism from Electrified Droplets.

5:10 PM - 5:30 PM

Speaker: Carlos Larriba-Andaluz, Purdue University

Small Deformation Theory for Ferrofluid Emulsions under Linear Flow Fields

5:30 PM - 5:50 PM

Speaker: Sunand Bhattacharjee, Purdue University

Wave–Meniscus Interaction in Capillary–Gravity Wave Transmission Across a Barrier: Experiment and Simulation

5:50 PM - 6:10 PM

Speaker: Zhengwu Wang, University of Mississippi

5.3.7: Instabilities for Functionality in Slender Structures and Architected Systems

Location: KRAN G004

Moderators: Mingchao Liu

A Symplectic Framework for Wrinkling and Period Doubling in Compressible Bilayers

4:30 PM - 4:50 PM

Speaker: Teng Zhang, Syracuse University

Programmable Shape Morphing of Cellular Thin-Shell Structures via Snap-Through Instabilities

4:50 PM - 5:10 PM

Speaker: Siamand Lalisani, Cornell University

Interaction of Propagating Fold Instabilities in Deployable Composite Shells

5:10 PM - 5:30 PM

Speaker: Andrew Lee, Johns Hopkins University

Multiphysic Actuation Mechanisms for Bistable Axisymmetric Shells

5:30 PM - 5:50 PM

Speaker: César Fartoukh, Laboratoire d'Ingénierie des Systèmes de Versailles (LISV)

4:30 PM - 6:10 PM

Mechanical Buckling of Plastic Sheets with Stretched Fabric for Multistable Actuation

5:50 PM - 6:10 PM

Speaker: Cindy Harnett, University of Louisville

5.1.4: Mechanics of Interfaces: Deformation, Adhesion, Fracture, and Friction

Location: KRAN G010

Moderators: Ruobing Bai

Configurational Forces Revisited

4:30 PM - 4:50 PM

Speaker: Sayaka Kochiyama, Brown University

A Peridynamic Framework for Fluid-Assisted Interfacial Peeling

4:50 PM - 5:10 PM

Speaker: Ziyu Wang, Purdue University

Effects of Elastic Interactions on Cavities in Non-Linear Elastic Media

5:10 PM - 5:30 PM

Speaker: Ali Saeedi, University of New Hampshire

4:30 PM - 6:10 PM

5.6.4: Computational Fracture Mechanics Across Materials and Length Scales

Location: KRAN G012

Moderators: Lampros Svolos

Mechanism-Aware Versus Mechanism-Agnostic Modeling of Void-Mediated Failure in Nominally Isotropic Magnesium Alloys

4:30 PM - 4:50 PM

Speaker: Shailendra Joshi, University of Houston

A Finite-Strain Microplane Damage Model for Fracture of Soft Materials

4:50 PM - 5:10 PM

Speaker: Zdenek Bazant, Northwestern University

Analyzing the Effect of Pulse Duration on Void Nucleation and Growth during Spall via Molecular Dynamics Simulation

5:10 PM - 5:30 PM

Speaker: Andre Archer, University of Florida

Hybrid Interatomic Potentials for Large-Scale Atomistic Fracture Simulation

5:30 PM - 5:50 PM

Speaker: Moon-Ki Choi, University of Illinois Urbana-Champaign

Role of Size, Contact Geometry, and Interatomic Potential in the Brittle-To-Ductile Transition of Silicon Nanocolumns

5:50 PM - 6:10 PM

Speaker: Syed Iqbal, University of Cincinnati

4:30 PM - 6:10 PM

4.7.1: Data-driven Experimental and Theoretical Studies for Functional Nanoscale Materials

Location: KRAN G018

Moderators: Ahmad Ahmad

Synthvanet for Effective Structure Prediction of Vertically Aligned Nanocomposite Synthesis

4:30 PM - 4:50 PM

Speaker: Jianan Shen, Purdue University

Atomic-Scale Mechanisms of Interphase Formation at Lithium–Glassy Sulfide Electrolyte Interfaces via Machine Learning Force Fields

4:50 PM - 5:10 PM

Speaker: Rui Zhou, Iowa State University

Electrochromic Photodetectors for Hyperspectral In-Sensor Computing and Compact AI Vision

5:10 PM - 5:30 PM

Speaker: Ran Li, Texas A&M University

Optimizing Synthesis of Near-Monolayer SnSe by Bayesian-Mbe (Bambe)

5:30 PM - 5:50 PM

Speaker: Eric Welp, The Pennsylvania State University

On the Binding and Stability of a CeO₂ Molecule on Au(001), (110), and (111) Surfaces

5:50 PM - 6:10 PM

Speaker: Ying-Cheng Chen, Purdue University

6:10 PM - 7:00 PM

FREE TIME

7:00 PM - 9:00 PM

BANQUET PMU Ballrooms

Wednesday, October 14, 2026

7:00 - 10:00 AM

Conference Registration - STEW 109 BC - 7:00 AM - noon

7:00 AM - 8:00 AM

Light Breakfast, Hospitality Room - STEW 306

8:00 AM - 10:00 AM

2.1.1: Emergent Behavior in Active Matter

Location: STEW 202

Moderators: Franck Vernerey

Mechanoregulation of Gram-Positive Biofilm Emergence

8:00 AM - 8:20 AM

Speaker: Bahareh Behkam, Virginia Tech, Blacksburg, VA

Universal Persistent Brownian Motion in Densely Packed Fluid Tissues

8:20 AM - 8:40 AM

Speaker: Sangwoo Kim, École polytechnique fédérale de lausanne (EPFL)

A Computational Model of Fluctuating Active Membranes: Implication for Entropic Pressure

8:40 AM - 9:00 AM

Speaker: Rubayet Hassan, New Jersey Institute of Technology

From Local Rules to Global Function in Collectively Constructed Structures

9:00 AM - 9:20 AM

Speaker: Andrew Slezak, University of Illinois Urbana-Champaign

8:00 AM - 10:00 AM

2.2.5: Biomechanics and Biomimetics Across Time and Length Scales

Location: STEW 204

Moderators: Callan Leutkemeyer, Ottman Tertuliano

Toward Tear Repair Optimization Using a Digital Twin of Rotator Cuff Tendon Surrogate

8:00 AM - 8:20 AM

Speaker: Carla Nathaly Villacis Nunez, University of Michigan

Linking Collagen Microstructure to Uterine Mechanics through Inflation Experiments and Image-Informed Inverse Finite Element Analysis

8:20 AM - 8:40 AM

Speaker: Mahmuda Raakib Arshee, University of Illinois Urbana Champaign

Identifying Extracellular Matrix Contributions to Transient Mechanical Behavior of Murine Cervical Tissue during Pregnancy Remodeling Using a 1D Fractional Poro-Viscoelastic Model

8:40 AM - 9:00 AM

Speaker: Bex Pendrak, Columbia University

Diffusion Mri Sensitivity to Microstructural Changes in Reproductive Tissue Across Pregnancy

9:00 AM - 9:20 AM

Speaker: Advait Borole, Virginia Tech

8:00 AM - 10:00 AM

2.9.8: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Shujie Yang

Acoustofluidic Technologies for Exploration of Microswimmer Behavior

8:00 AM - 8:20 AM

Speaker: J. Mark Meacham, Washington University in St. Louis

Acoustic Control of Wave Interactions in Complex Media

8:20 AM - 8:40 AM

Speaker: Yuyang Gu, Binghamton University

Conformable Ultrasonic Electronics for Deep Tissue Imaging

8:40 AM - 9:00 AM

Speaker: Lin Zhang, University at Buffalo

AI-Powered Multiparametric Paul Image Guided Focused-Ultrasound Blood-Brain Barrier Opening

9:00 AM - 9:20 AM

Speaker: Yun-Sheng Chen, University of Illinois Urbana Champaign

Overcoming the Classical Contrast Factor Limit: Trapping Reversal in Sound Beams

9:20 AM - 9:40 AM

Speaker: Likun Zhang, University of Mississippi

A Unified Euler-Lagrange Framework for Acoustic Radiation Forces and Torques

9:40 AM - 10:00 AM

Speaker: Junfei Li, Purdue University

8:00 AM - 10:00 AM

2.8.2: From Nerves to Nanomaterials: Mechanics of Super Soft Porous Materials

Location: STEW 214A

Moderators: Arina Korneva

Do Soft Pores Rectify Fluid Flow in the Brain?

8:00 AM - 8:40 AM

Speaker: Douglas Kelley, University of Rochester

Fluid Drainage in Loaded Cylindrical Poroelastic Composites: Analytical Modeling with Application to the Optic Nerve

8:40 AM - 9:00 AM

Speaker: Arina Korneva, Virginia Tech

Uncovering the Micromechanics of Hydrogel Friction Using Mesoscale Modeling

9:00 AM - 9:20 AM

Speaker: Alexander Alexeev, Georgia Institute of Technology

Modeling Lipid Nanoparticle Transport in Extracellular Matrix: Effects of Particle Size and Rigidity

9:20 AM - 9:40 AM

Speaker: Prasheel Nakate, Purdue University

8:00 AM - 10:00 AM

2.7.2: Biomechanics of Morphogenesis

Location: STEW 214B

Moderators: Daniel Szymanski

Evaluating the Capability of Tension-Induced Growth to Reproduce Measured Volumetric Changes during Brain Development

8:00 AM - 8:20 AM

Speaker: Ramin Balouchzadeh, Indiana University

Interplay of Tension from Multiple Axons and Curvature:

8:00 AM - 10:00 AM

Deciding Factor of Cortical Folding Pattern.

8:20 AM - 8:40 AM

Speaker: Eshan Dey, University of Notre Dame

Biomechanics and Stress States of Deadhesion in Plant Cells

8:40 AM - 9:00 AM

Speaker: Tanner Ballance, Purdue University

Modeling Mesophyll Development: Disentangling the Competing Mechanisms That Can Give Rise to Tissue Porosity

9:00 AM - 9:20 AM

Speaker: Arthur Mackeith, Yale University

Parameterized Sensitivity Analysis Reveals the Relationships between Biomass, Morphology, and Maize Stalk Strength

9:20 AM - 9:40 AM

Speaker: Douglas Cook, Brigham Young University

2.4.1: Mechanically Engineered Biological Fate, Form, and Function

Location: STEW 214C

Moderators: Yue Liu

Mechanical Coordination in Morphogenesis: From Cells to Tissues

8:00 AM - 8:20 AM

Speaker: Shinuo Weng, Johns Hopkins University

Tissue Growth and Fluidization Mediated Gap Closure

8:20 AM - 8:40 AM

Speaker: Yubing Sun, University of Massachusetts Amherst

4D Printing Self-Adaptive Smart Constructs for Dynamic Control of Stem Cell Fate and Tissue Functionalization

8:40 AM - 9:00 AM

Speaker: Lijie Grace Zhang, The George Washington University

Multiscale Mechano-Medicine: From Mechanobiology to Mechanotherapy

9:00 AM - 9:20 AM

Speaker: Sungmin Nam, University of Michigan

Non-Contact Mechanical Imaging of Cells and Tissue Using Optical Brillouin Microscopy

9:20 AM - 9:40 AM

Speaker: Jitao Zhang, Michigan State University

Acoustic Cell Patterning Reveals Geometry- and Substrate-Dependent Vasculogenesis and Human Embryo Model Development

9:40 AM - 10:00 AM

Speaker: Zhaoyi Xu, University of Michigan

8:00 AM - 10:00 AM

4.5.1: Photomechanical and Electromechanical Behaviors in Ceramics, Semiconductors and Metals

Location: STEW 214D

Moderators: Qi An

Design of Ductile Ceramics with Engineered Defect Framework

8:00 AM - 8:40 AM

Speaker: Haiyan Wang, Purdue University MSE

Kink-Pair Nucleation and Migration Barriers in Photo-Excited CdTe

8:40 AM - 9:20 AM

Speaker: Lin Li, Arizona State University

Photoplasticity and Deformation Mechanisms of Silicon Carbide

9:20 AM - 9:40 AM

8:00 AM - 10:00 AM

Speaker: Jing Shang, Institute of Materials Research

Mechanical Behavior of Nbnx Films by Reactive Magnetron Sputtering

9:40 AM - 10:00 AM

Speaker: Yang Chen, Purdue University

3.3.2: Mechanics-driven Design and Manufacturing for Metamaterials and Soft Actuators

Location: STEW 218A

Moderators: Shuai Wu, Liwei Wang

The Role of Curvature and Friction on the Lifting Capability of Passive and Active Grippers

8:00 AM - 8:20 AM

Speaker: Grace Curtis, University of Oxford

Wireless Lc Sensors Free of Battery, Chip, and Frequency Sweeping

8:20 AM - 8:40 AM

Speaker: Shuang Li, University of Texas at Austin

Magnetic Milli-Spinner for Robotic Endovascular Surgery

8:40 AM - 9:00 AM

Speaker: Shuai Wu, Oregon State University

3D Printing of Functional and Tunable Foams for Impact Protection

9:00 AM - 9:20 AM

Speaker: Kerwin Shi, Georgia Institute of Technology. Atlanta

A Reduced-Order Shell Model for Morphogenesis in Thermally Actuated Kirigami Composites

9:20 AM - 9:40 AM

Speaker: Yupeng Zhang, UCLA

Controlled Coiling Dynamics in Soft Tentacle Actuators

9:40 AM - 10:00 AM

Speaker: Rashmi Wijesundara, University of North Texas

8:00 AM - 10:00 AM

7.3.1: Symmetry in Mechanics

Location: STEW 218B

Moderators: Ivan C. Christov

Material Symmetry: A Few Sketches

8:00 AM - 8:40 AM

Speaker: James Hanna, University of Nevada

Generalized Configurational Force for Thermoelasticity with Application to Isogeometric Analysis of Thermoelastic Crack Propagation

8:40 AM - 9:00 AM

Speaker: Ganesh Subbarayan, Purdue University

Exploring Pseudomomentum Balances in Fluid Mechanics: From Added Mass to Inhomogeneous Fluids

9:00 AM - 9:20 AM

Speaker: Md Mahmudur Rahman, Purdue University

Variational Principles for Equations of Motion

9:20 AM - 9:40 AM

Speaker: Amit Acharya, Carnegie Mellon University

Symmetry-Driven Analysis of Guided Modes in Elastic Waveguides

9:40 AM - 10:00 AM

Speaker: Mohit Kumar, Purdue University

8:00 AM - 10:00 AM

7.10.1: Multimodal Scanning Probe Nano-Metrology via Contact and Non-Contact Mechanics

Location: STEW 218C

Moderators: SungWoo Nam

Atomic-Resolution Imaging of Wc/Graphene Heterostructures: Defects and Moiré Patterns

8:00 AM - 8:20 AM

Speaker: Mehmet Z. Baykara, University of California

Generalized Defect Quantification of 2D Materials with Atomic Force Microscopy

8:20 AM - 8:40 AM

Speaker: Matthew Rosenberger, University of Notre Dame

Failure of 2D Metal Halide Perovskites under Electrical Field

8:40 AM - 9:00 AM

Speaker: Qing Tu, Texas A&M University

Optical Control of Nanoscale Friction via Excitonic Coupling in Two-Dimensional Heterostructures

9:00 AM - 9:20 AM

Speaker: Akibul Islam, University of California

Auto-Kirigami: Triggered Self-Assembly of Novel Nanostructures from 2D Materials by Combining Cutting, Folding, Adhesion, and Sliding

9:20 AM - 9:40 AM

Speaker: Robert Carpick, University of Pennsylvania

8:00 AM - 10:00 AM

4.4.5: Controlling Mechanical Waves with Metamaterials

Location: STEW 218D

Moderators: Charles Dorn

Topological Edge Modes and Bandgap Characterization in Twisted Timoshenko Beams

8:00 AM - 8:20 AM

Speaker: Somraj Sen, Ray W. Herrick Laboratories

Trade-Space of Polar Elastic Metamaterials with Topological Kagome Architectures

8:20 AM - 8:40 AM

Speaker: James Mcinerney, Air Force Research Laboratory

Two Topological Classes of Tunable Defect-Coupled States in Elastic Lattices

8:40 AM - 9:00 AM

Speaker: Udbhav Vishwakarma, Georgia Institute of Technology

Extreme Energy Localization in an Asymmetric Linkage System via Singular Edge Modes

9:00 AM - 9:20 AM

Speaker: Myeonggyun Joo, Seoul National University

On the Surface Waves in Truncated Phononic Crystals

9:20 AM - 9:40 AM

Speaker: Long Nguyen, University of Minnesota- Twin cities

Truncation Resonances in 2D Discrete Lattices: Theory and Control Capability

9:40 AM - 10:00 AM

Speaker: Yichen Shi, University of Illinois Urbana Champaign

8:00 AM - 10:00 AM

3.7.8: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278

Moderators: Wanliang Shan

An Underactuated Hyper-Redundant Robot with Passive Multiplexing Enabled by Multistability

8:00 AM - 8:20 AM

Speaker: Jordan Raney, University of Pennsylvania

Electrical Sensing, Actuation and Control of Soft Robots: Towards Wearable and Implantable Systems

8:20 AM - 8:40 AM

Speaker: Siyi Xu, UIUC

Spatially Modulated Stretchability in Dual-Network Elastomer Composites for Programmable Soft Actuators and Substrates

8:40 AM - 9:00 AM

Speaker: Michelle Yuen, Montana State University

Stretchable Hybrid-Response Pressure Sensors (Shrps) with

8:00 AM - 10:00 AM

Architected Lattices and Multimodal Robotic Perception

9:00 AM - 9:20 AM

Speaker: Nanshu Lu, The University of Texas at Austin

4.2.8: Advances on the Mechanics of Architected Materials

Location: STEW 279

Moderators: David Restrepo

Impact Mechanics of Fcc Granular Crystals: Experiments and Models.

8:00 AM - 8:20 AM

Speaker: Armin Yousefi, University of Colorado Boulder

High-Speed Penetration of “Architected” Fcc Granular Crystals: Experiments and Models

8:20 AM - 8:40 AM

Speaker: Ashta Navdeep Karuriya, University of Colorado Boulder

Fully Dense Beaded Granular Crystals

8:40 AM - 9:00 AM

Speaker: Daniel Sawai, University of Colorado Boulder

Energy Absorption Performance of Filled Lattice Structures

9:00 AM - 9:20 AM

Speaker: Christian Bonney, University of Illinois Urbana-Champaign

Friction-Driven Architected Materials for Energy Dissipation

9:20 AM - 9:40 AM

Speaker: Tiantian Li, University of Missouri Kansas City

Tuning Interfacial Response Using Architected Lattices

9:40 AM - 10:00 AM

Speaker: Onur Ali Batmaz, ETH Zurich

8:00 AM - 10:00 AM

2.6.8: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310

Moderators: Hanxun Jin, Grace Gu

Mechanics of Esophageal Retraction during Anterior Cervical Discectomy and Fusion

8:00 AM - 8:20 AM

Speaker: Raudel Avila, Rice University

Mechanics-Informed Assembly of 3D Electronic and Microfluidic Mesostructures as Conformal Biointerfaces

8:20 AM - 8:40 AM

Speaker: Haiwen Luan, University of California

Computational Design and Mechanical Validation of Bioresorbable PLGA/HA and PCL/HA Tibial Knee Replacement Implants in Sheep

8:40 AM - 9:00 AM

Speaker: Ozan Akkus, Case Western Reserve University

Multiscale Computational Modeling for Enhanced Passive Transdermal Delivery

9:00 AM - 9:20 AM

Speaker: Changjin Huang, Nanyang Technological University

Aspherical Microcavitations in Layerless Grayscale Hydrogels

9:20 AM - 9:40 AM

Speaker: Aryan Shah, University Of Michigan Ann Arbor

Convergent Evolution of Helicoidal Architectures: Mechanics, Optimization, and 3D Printing

9:40 AM - 10:00 AM

Speaker: Grace Gu, University of California

8:00 AM - 10:00 AM

4.9.1: Mechanics and Dynamics of Soft Electrochemically Active Materials

Location: STEW 311

Moderators: Xiaokang Wang

Molecular Structure and Band-Like Electron Transport in Highly Conductive N-Type Polymers

8:00 AM - 8:20 AM

Speaker: Xixian Yang, Purdue University

Nonlocal Effect of Percolated Particle Networks on Viscoelasticity of Polymer-Filler Nanocomposites: A Mesoscale Simulation Study

8:20 AM - 8:40 AM

Speaker: Ying Li, University of Wisconsin-Madison

Operando Optical Tracking of Mixed Ionic-Electronic Transport in Conjugated Polymers

8:40 AM - 9:00 AM

Speaker: Scott Keene, Rice University

Machine Learning Assisted 4D-Stem Analysis of Molecular Ordering in Disordered Soft Materials

9:00 AM - 9:20 AM

Speaker: Jinwoo Hwang, The Ohio State University

Non-Equilibrium Microstructures and Mechanical Properties of Hydrogel Enabled Additively Manufactured Metallo-Polyelectrolyte Complexes (Mpec)

9:20 AM - 9:40 AM

Speaker: Julia Greer, California Institute of Technology

8:00 AM - 10:00 AM

7.7.2: Data-driven Methods for Inelastic Solids and Structures

Location: STEW 313

Moderators: Burigede Liu

Exascale Graph Foundation Models for Data-Driven Materials Design in Extreme Environments

8:00 AM - 8:20 AM

Speaker: Massimiliano Lupo Pasini, Oak Ridge National Laboratory

A Differentiable Framework for Gradient Enhanced Damage with Physics-Augmented Neural Networks in Jax-FEM

8:20 AM - 8:40 AM

Speaker: Mark Wilkinson, Purdue University

A Learning-Based Domain Decomposition Method

8:40 AM - 9:00 AM

Speaker: Rui Wu, University of Cambridge

Developing Composition-Dependent Mobility Laws for Fe–Cr Alloys Using Molecular Dynamics

9:00 AM - 9:20 AM

Speaker: Kieran Edmonds, Purdue University

Deep Mechanician: Closed Loop LIm Assisted Constitutive Modeling with Physics Aware Verification

9:20 AM - 9:40 AM

Speaker: Hao Li, University of Cambridge

Machine Learned Force Fields for Molecular Dynamics Simulation in Fusion Applications

9:40 AM - 10:00 AM

Speaker: Markus Eisenbach, Oak Ridge National Laboratory

8:00 AM - 10:00 AM

7.6.1: Mechanics in Sustainable Materials and Systems

Location: RAWLS 1011

Moderators: Christos Athanasiou

Printimization: Computationally Efficient Shape Optimization of 3D Printable Concrete Elements

8:00 AM - 8:20 AM

Speaker: Lohit Malik, Cornell University

Fracture Mechanics of Rare-Earth Permanent Magnets

8:20 AM - 9:00 AM

Speaker: Xing Liu, New Jersey Institute of Technology

Mechanically Robust and Depolymerizable Polyesters with Near-Complete Monomer Recovery for Circular Additive Manufacturing

9:00 AM - 9:20 AM

Speaker: Farzad Gholami, Georgia Institute of Technology

Metal, Tension-Activated Kirigami for Glass Interlayers

9:20 AM - 9:40 AM

Speaker: Daniel Massimino, Massachusetts Institute of Technology

8:00 AM - 10:00 AM

7.4.2: Advances in Experimental Electro-Chemo-Mechanics

Location: RAWLS 1057

Moderators: Juner Zhu

Electrochemistry Embrittles Solid Electrolytes

8:00 AM - 8:20 AM

Speaker: Cole Fincher, MIT

Probing Mechanical Piezo-Electrochemical Effects in Lithium Metal Batteries

8:20 AM - 8:40 AM

Speaker: Wei Lu, University of Michigan

Toward Reliable Peel Adhesion Measurements for Battery Electrodes: Plasticity Effects, Pitfalls, and Best Practices

8:40 AM - 9:00 AM

Speaker: Zubair Mumin Wahed, Purdue University

Direct and in Situ Measurement of Stress-Potential Coupling in Solid-State, Thin-Film Electrode Materials

9:00 AM - 9:20 AM

Speaker: Paul Albertus, University of Maryland

Stress-Controlled Dendrite Evolution in Solid Electrolytes

9:20 AM - 9:40 AM

Speaker: Siyuan Song, Brown University

10:00 AM - 10:30 AM

BREAK | Hospitality Rooms, STEW 306& Rawls Atrium

10:30 AM - 12:30 PM

2.1.2: Emergent Behavior in Active Matter

Location: STEW 202

Moderators: Brian Cox

10:30 AM - 12:30 PM

10:30 AM - 12:30 PM

Modeling of Agent Interactions in a Complex Landscape

10:30 AM - 11:10 AM

Speaker: Benjamin Jasperson, University of Southern California

Inertial Waves and Transformations in Contiguous Populations of Cells

11:10 AM - 11:30 AM

Speaker: Brian Cox, Gentleman Scientist

7.9.1: High-Throughput and Rapid Testing

Location: STEW 204

Moderators: Kawai Kwok

High Throughput Laser Driven Flyer Impact System for Evaluating Shock Response of Binary Alloys

10:30 AM - 10:50 AM

Speaker: Piyush Wanchoo, Johns Hopkins University

High-Throughput Viscoelastic Characterization Using Parallel Testing

10:50 AM - 11:10 AM

Speaker: Cameron Cohen, Purdue University

Decoding Failure Probability from Load-Displacement Curves: The Stash High-Throughput Testing Framework

11:10 AM - 11:30 AM

Speaker: Wen Luo, Auburn University

In-Situ Rheological Characterization of Short Fiber Reinforced Polymers for Material Quality Control in Additive Manufacturing

11:30 AM - 11:50 AM

Speaker: Pedro Daniel Soto Rodriguez, CMSC - Purdue University

High-Throughput Characterization of Permanent Deformation in Stitched Composites

11:50 AM - 12:10 PM

Speaker: Vivek Khare, Mississippi State University

2.9.9: Acoustofluidics and Bioacoustics

Location: STEW 206

Moderators: Shujie Yang

Acoustic Traveling Wave Induced Shear Torsion (A-Twist) Platform to Promote Endothelial Cell Vascularization in Biomimetic Hydrogels

10:30 AM - 10:50 AM

Speaker: Joseph Rich, Brigham Young University

Bubble-Assisted Acoustofluidic Device for Tunable Protein Crystallization

10:50 AM - 11:10 AM

Speaker: Renjie Ning, University of Memphis

Monolithic, Multifunctional Polymer Acoustofluidic Devices with Tunable Mixing and Particle Focusing

11:10 AM - 11:30 AM

Speaker: Roxanne Kate Balanay, University of Hawaii at Manoa

Programming Acoustic Microbubbles: From Resonant Addressing to Active Reconfiguration

11:30 AM - 11:50 AM

Speaker: Zhiyuan Zhang, MIT

Dual Actuation Improves Identifiability of Transversely Isotropic Material Properties from Magnetic Resonance Elastography Using Optimized Virtual Fields Method

11:50 AM - 12:10 PM

Speaker: Adam Quin, University of Illinois Urbana-Champaign

Integrated Acoustic Microrobot Platform for Therapeutic Gas Delivery

12:10 PM - 12:30 PM

Speaker: Hong Han, California Institute of Technology

10:30 AM - 12:30 PM

2.7.3: Biomechanics of Morphogenesis

Location: STEW 214B

Moderators: Daniel Szymanski

Understanding Failure Progression in Maize Stalks Using Experiments and High-Fidelity Finite-Element Models

10:30 AM - 10:50 AM

Speaker: Euan Miller, Brigham Young University

A Stochastic Pipeline for High-Fidelity 3D Cellular Models

10:50 AM - 11:10 AM

Speaker: Christopher Stubbs, Fairleigh Dickinson University

Mechanics and Morphogenesis of Nsc-34 Cells

11:10 AM - 11:30 AM

Speaker: Ashfaq Adnan, University of Texas at Arlington

A Unified Framework for Growth-Based Cortical Parcellation and Computational Modeling of Brain Folding

11:30 AM - 11:50 AM

Speaker: Jixin Hou, University of Georgia

10:30 AM - 12:30 PM

2.4.2: Mechanically Engineered Biological Fate, Form, and Function

Location: STEW 214C

Moderators: Xin Tang

Vimentin Intermediate Filaments as Structural and Mechanical Coordinators of Mesenchymal Cells

10:30 AM - 10:50 AM

Speaker: Ming Guo, MIT

Mitosis in Highly Confining Microenvironments

10:50 AM - 11:10 AM

Speaker: Taeyoon Kim, Purdue University

Nuclear Mechanics Acts as a Fitness Checkpoint for Epithelial Cell Extrusion

11:10 AM - 11:30 AM

Speaker: Sarthak Gupta, Rice University

Biophysical Modulation of Chemical-Resistant Cells to Understand Lung Diseases

11:30 AM - 11:50 AM

Speaker: Safa Shahid, University of Florida

Reciprocal Interactions Among Mechanotransduction, Cell Metabolism, and Soft Materials

11:50 AM - 12:10 PM

Speaker: Xin Tang, University of Florida

Transport-Coupled Fibrin Deposition Drives Neuroinflammation and Neurodegeneration at the Blood-Brain Interface

12:10 PM - 12:30 PM

Speaker: Ali Akalin, University of Illinois Urbana-Champaign

10:30 AM - 12:30 PM

4.5.2: Photomechanical and Electromechanical Behaviors in Ceramics, Semiconductors and Metals

Location: STEW 214D

Moderators: Qi An

Dislocation-Like Mechanisms of Polytype Interface Migration in Layered Transition Metal Dichalcogenides

10:30 AM - 11:10 AM

Speaker: Liang Qi, University of Michigan

Deformation in Nanocrystalline Cdte and Photomechanical Effects from Machine-Learning Force Field Simulations

11:10 AM - 11:30 AM

Speaker: Qi An, Iowa State University

Molecular Dynamics Study of Light-Induced Modulation of Phase Transformation and Deformation in Zns

11:30 AM - 11:50 AM

Speaker: Chengchi Cao, Iowa State University

Data Analytics for the Identification of Cosintering Regimes

11:50 AM - 12:10 PM

Speaker: Alfredo Sanjuan Sanjuan, Purdue University

10:30 AM - 12:30 PM

3.3.3: Mechanics-driven Design and Manufacturing for Metamaterials and Soft Actuators

Location: STEW 218A

Moderators: Craig Michael Hamel

Diffusion-Based Inverse Design of Organ-Inspired Auxetic Metastructure Patches

10:30 AM - 10:50 AM

Speaker: Yingbin Chen, Iowa Technology Institute

Gradient-Based Design of Meta-Materials and Shape Memory Composites

10:50 AM - 11:10 AM

Speaker: Craig Hamel, Sandia National Laboratories

Data-Driven Inverse Design of Multi-Material Truss Metamaterials with Automated Design Workflows

11:10 AM - 11:30 AM

Speaker: Abu-Mualla Mohammad, University of Illinois Chicago

Parametrically Graded Architected Materials Using Field-Guided Voronoi Tessellations

11:30 AM - 11:50 AM

Speaker: John Koithan, Texas A&M University

A Density-Based Mpm Topology Optimization Framework for Large Deformation and Self-Contact Interactions

11:50 AM - 12:10 PM

Speaker: Jihyuk Park, University of Illinois Urbana-Champaign

Physical Learning through Mechanical Equilibrium of Tunable Lattices

12:10 PM - 12:30 PM

Speaker: Manas Bhadury, Duke University

10:30 AM - 12:30 PM

7.3.2: Symmetry in Mechanics

Location: STEW 218B

Moderators: Md Mahmudur Rahman

A Regularized Sadowsky Strip Model Based on a Nondevelopable Surface

10:30 AM - 10:50 AM

Speaker: Eduardo Vitral, Rose-Hulman Institute of Technology

The Mechanics and Modeling of Odd Elasticity in Classical Continuum Theory

10:50 AM - 11:10 AM

Speaker: Zachary Wolfgram, University of Illinois Urbana-Champaign

Symmetry Reduction of Dislocation Correlations in Fcc

10:30 AM - 12:30 PM

10:30 AM - 12:30 PM

10:30 AM - 12:30 PM

Crystals

11:10 AM - 11:30 AM

Speaker: Joseph Anderson, Purdue University

Geometric Field Theory of Elastodynamics and Dislocations

11:30 AM - 11:50 AM

Speaker: Puneeth Shekar, Indian Institute of Science

7.10.2: Multimodal Scanning Probe Nano-Metrology via Contact and Non-Contact Mechanics

Location: STEW 218C

Moderators: SungWoo Nam

Tunability of Interfacial Forces in 2D Materials

10:30 AM - 10:50 AM

Speaker: Rosa Espinosa Marzal, University of Illinois at Urbana-Champaign

Visible Photo-Induced Force Imaging of Two-Dimensional Semiconductors

10:50 AM - 11:10 AM

Speaker: Sungwoo Nam, University of California

Structured-Light Photoinduced Force Nano-Metrology of Au-Supported Monolayer WSe₂

11:10 AM - 11:30 AM

Speaker: Peiwen J Ma, University of California

Quantitative Multiphysical Nano-Metrology of Biomaterials via Multimodal AFM

11:30 AM - 11:50 AM

Speaker: Hanna Cho, The Ohio State University

Scanning Probe Microscopy in Liquid: From Atomic Force to Mid-Infrared Transmission

11:50 AM - 12:10 PM

Speaker: Yingjie Zhang, University of Illinois Urbana-Champaign

Generating Monolayer Amorphous Carbon by On-Surface Synthesis

12:10 PM - 12:30 PM

Speaker: Shadi Fatayer, KAUST

7.5.1: Physics-Based and Uncertainty-Aware Modeling of Materials from Multisource Data

Location: STEW 218D

Moderators: Bahador Bahmani

Designing High-Modulus Zero-Cte Composite Laminates Using Stochasticity-Aware Laminar Design (Sald)

Framework

10:30 AM - 10:50 AM

Speaker: Yasara Dharmadasa, University of Wisconsin-Madison

Physically Informed Statistical Attribution of Heterogeneous Deformations in Single- and Polycrystalline Tantalum

10:50 AM - 11:10 AM

Speaker: Samuel Dunham, University of Wisconsin - Madison

A Physics-Constrained Machine Learning Framework for Constitutive Modeling of Quasi-Brittle Materials

11:10 AM - 11:30 AM

Speaker: Houlin Xu, Johns Hopkins University

A Multimodal Conditional Mixture Model with Distribution-Level Physics Priors

11:30 AM - 11:50 AM

Speaker: Bahador Bahmani, Northwestern University

Structure-Preserving Uncertainty Quantification for Dissipative Systems

11:50 AM - 12:10 PM

Speaker: Zequn He, University of Pennsylvania

3.7.9: Soft Robotics: Matter, Structure, and Intelligence

Location: STEW 278
Moderators: Wanliang Shan

Lorentz Force–Driven Shape-Morphing Structures

10:30 AM - 10:50 AM

Speaker: Xinchun Ni, The University of Texas at Dallas

Embodied Tensegrity Intelligence in Soft and Adaptive Robotic Systems

10:50 AM - 11:10 AM

Speaker: Vishesh Vikas, University of Alabama

From Rigid to Soft: Evolving Design Strategies in Wearable Haptics

11:10 AM - 11:30 AM

Speaker: Cara M. Nunez, Cornell University

Toward Intelligent Manipulation: From Tactile Sensing and Embodied AI to General-Purpose Robotics

11:30 AM - 11:50 AM

Speaker: Yu She, Purdue University

Soft Pressure-Tolerant Ocean Sensing Platform for Distributed Marine Systems

11:50 AM - 12:10 PM

Speaker: Xueju Wang, University of Connecticut

Visualizing and Quantifying Electromechanical Response in Liquid Metal Composites for Soft Circuits

12:10 PM - 12:30 PM

Speaker: Hugh P. Grennan, Virginia Tech, Soft Materials and Structures Lab

10:30 AM - 12:30 PM

4.2.9: Advances on the Mechanics of Architected Materials

Location: STEW 279
Moderators: David Restrepo

Shellular Funicular Structures

10:30 AM - 10:50 AM

Speaker: Mostafa Akbari, Texas A&M University

DNA Origami Platform for Architected Nanomaterials

10:50 AM - 11:10 AM

Speaker: Jong Hyun Choi, Purdue University

Rip-Stop Metamaterials Inspired by Double Gyroids

11:10 AM - 11:30 AM

Speaker: Jacqueline Zhou, California Institute of Technology

A Real-Time Hybrid Simulation Framework for Testing Seismic Metamaterials

11:30 AM - 11:50 AM

Speaker: Tao Zhang, Purdue University

10:30 AM - 12:30 PM

2.6.9: Experimental and Computational Methods in Mechanobiology and Biomaterial Innovation

Location: STEW 310
Moderators: Grace Gu, Farid Alisafaei

Computational Design and Experimental Demonstration of Mechanical Frustration in DNA Nanostructures

10:30 AM - 10:50 AM

Speaker: Anirudh Madhvacharyula, Purdue University

Architecture and Topology Encodes Rupture in Fibrin Fiber Networks

10:50 AM - 11:10 AM

Speaker: Beikang Gu, University of Georgia

Multiscale Structure–Mechanics Relationships in Collagen Fibrils: Effects of 3D Structure, Fibril Bending Stiffness, and Inter-Fibril Crosslinks

11:10 AM - 11:30 AM

Speaker: Xiaotian Zheng, Clemson University

Mapping Sequence-Mechanics Relationships in Resilin-Inspired Elastomer Networks

11:30 AM - 11:50 AM

Speaker: Gwen Liu, Northwestern University

A Generalized Computational Framework for Quantitative Identification of Load-Bearing Fiber Families in Biological Tissues Using Multi-Parameter Structural Weights

11:50 AM - 12:10 PM

Speaker: Tair Ginayat, University of South Florida

Experimental and Computational Evaluation of Compressibility in Silicone Elastomers

12:10 PM - 12:30 PM

Speaker: Jeetika Patangia, Brown University

10:30 AM - 12:30 PM

4.9.2: Mechanics and Dynamics of Soft Electrochemically Active Materials

Location: STEW 311

Moderators: Siddharth Doshi

Mechanoneural Coupling in Soft Electrochemically Active Human Skin: Biomechanical Activation of Deep Sensory Neurons by Topical Treatments

10:30 AM - 10:50 AM

Speaker: Reinhold Dauskardt, Stanford University

Optical Detection of Cell Signals at Polymer Biointerfaces

10:50 AM - 11:10 AM

Speaker: Yuecheng Peter Zhou, University of Illinois Urbana-Champaign

Conductive Polymer Composites for Bioelectronics

11:10 AM - 11:30 AM

Speaker: Aristide Gumyusenge, MIT

Fiber-Matrix Debonding and Multifunctional Performance Effects in Carbon Fiber Structural Battery Electrodes

11:30 AM - 11:50 AM

Speaker: Cesar Metlich, Texas A&M University

Bicontinuous Electrolytes for Structural Batteries

11:50 AM - 12:10 PM

Speaker: Tianyang Zhou, San José State University

10:30 AM - 12:30 PM

7.6.2: Mechanics in Sustainable Materials and Systems

Location: RAWLS 1011

Moderators: Xing Liu

Environmental Stress Cracking of Biodegradable Polymers

10:30 AM - 11:10 AM

Speaker: Lihua Jin, University of California

Engineering Long-Acting Oral Delivery Systems for Near-Linear, Sustained Drug Release

11:10 AM - 11:30 AM

Speaker: Troy Mcmanus, Michigan State University

10:30 AM - 12:30 PM

7.4.3: Advances in Experimental Electro-Chemo-Mechanics

Location: RAWLS 1057

Moderators: Cole Fincher

Thermo-Electrochemical and Chemo-Mechanical Instability in Solid-State Battery Architectures

10:30 AM - 10:50 AM

Speaker: Partha Mukherjee, Purdue University

Predicting Battery Breathing and Swelling via a Coupled P2d Electrochemical-Plasticity Framework

10:50 AM - 11:10 AM

Speaker: Junning Jiao, Northeastern University

Opto-Charge Microscopy (OCM) for Resolving Particle Dynamics in Electrochemical Network Materials

11:10 AM - 11:30 AM

Speaker: Jeongok Choe, Purdue University

Thermal Instabilities in Anode-Free Solid-State Batteries

11:30 AM - 11:50 AM

Speaker: Kausthubharam Kausthubharam, Purdue University

Linear Irreversible Thermodynamics Framework for Mechano-Electrochemical Impedance Spectroscopy of Porous Electrodes

11:50 AM - 12:10 PM

Speaker: Juner Zhu, Northeastern University

Dendrite Evolution in Lithium Metal Batteries with Curvature: Insights from Electrochemical Phase Field Modeling and In-Situ Experiments

12:10 PM - 12:30 PM

Speaker: Zhan-Sheng Guo, shanghai university

12:30 PM - 2:00 PM

LUNCH STEW 306