

Thematic Area 1. Medalist Symposia (Invited Only)

1.1 Prager Medal Symposium		
Session: 3A, Room: MSC-2406A		
Session Chair(s): Ivan Grega, ig348@cam.ac.uk		
9:45 AM	10:05 AM	General and exact theory of nonlinear elastodynamics: Unification of nonlinear dispersion and harmonic generation
		<i>Romik Khajehtourian, ETH Zurich; Mahmoud Hussein, University of Colorado Boulder</i>
		Speaker: Mahmoud Hussein (Invited Talk)
10:05 AM	10:25 AM	A unified modeling framework for soft and hard magnetorheological elastomers
		<i>Dipayan Mukherjee, University of Cambridge; Matthias Rambašek, TU Wien, Austria; Kostas Danas, CNRS, Ecole Polytechnique</i>
		Speaker: Kostas Danas (Invited Talk)
10:25 AM	10:45 AM	Giant Magnetoelectricity in Soft Materials Using Hard Magnetic Soft Materials
		<i>Pradeep Sharma, University of Houston</i>
		Speaker: Pradeep Sharma (Invited Talk)
10:45 AM	11:05 AM	Computer Modeling of Cardiac Microstructure and its Effects in Heart Diseases
		<i>Joy Mojumder, Department of Mechanical Engineering, Michigan State University; Ce Xi, Department of Mechanical Engineering, Michigan State University; Lei Fan, Department of Mechanical Engineering, Michigan State University; Lik Chuan Lee, Department of Mechanical Engineering, Michigan State University</i>
		Speaker: Lik Chuan Lee (Invited Talk)
Session: 3B, Room: MSC-2406A		
Session Chair(s): Angkur Shaikeea, ajds3@cam.ac.uk ; Ivan Grega, ig348@cam.ac.uk		
11:40 AM	12:10 PM	Fracture of 2D Materials – In situ Experiments and ML Parameterized Force Fields
		<i>Horacio Espinosa, Northwestern University; Xu Zhang, Northwestern University; Hoang Nguyen, Northwestern University; Jianguo Wen, Argonne National Lab; Jeff Paci, University of British Columbia</i>
		Speaker: Horacio Espinosa (Keynote Talk)
12:10 PM	12:40 PM	Lab-Earthquakes: Using Super-fast Ruptures to Reveal the Nature of Dynamic Friction During Earthquakes
		<i>Ares Rosakis, California Institute of Technology</i>
		Speaker: Ares Rosakis (Keynote Talk)
Session: 4A, Room: MSC-2406A		
Session Chair(s): Lucas Meza, lmeza@uw.edu		
2:15 PM	2:35 PM	Void-mediated failure in advanced microstructures
		<i>Shailendra Joshi, University of Houston; Padmeya Indurkar, University of Cambridge; Kartikey Joshi, Institute of High Performance Computing, Singapore; Amine Benzerga, Texas A & M University</i>
		Speaker: Shailendra Joshi (Invited Talk)
2:35 PM	2:55 PM	Learning based multiscale modeling
		<i>Burigede Liu, University of Cambridge</i>

		Speaker: Burigede Liu (Invited Talk)
2:55 PM	3:25 PM	Towards a Multiscale Model of the Brain ECM
		<i>Saber Shakibi, Zernike Institute for Advanced Materials, University of Groningen; Patrick Onck, Zernike Institute for Advanced Materials, University of Groningen; Erik Van der Giessen, Zernike Institute for Advanced Materials, University of Groningen</i>
		Speaker: Erik Van der Giessen (Keynote Talk)
3:25 PM	3:45 PM	Sensitivity of aortic mechanics to smooth muscle orientation and function
		<i>Malte Rolf-Pissarczyk, Institute of Biomechanics, Graz University of Technology, Graz, Austria; Maximilian Wollner, Institute of Biomechanics, Graz University of Technology, Graz, Austria; Gian Marco Melito, Institute of Mechanics, Graz University of Technology, Graz, Austria; Gerhard Holzapfel, Institute of Biomechanics, Graz University of Technology, Graz, Austria, Department of Structural Engineering, Norwegian University of Science and Technology, Trondheim, Norway</i>
		Speaker: Malte Rolf-Pissarczyk (Invited Talk)
Session: 4B, Room: MSC-2406A		
Session Chair(s): Kristen Miller, krismiller17@gmail.com		
4:10 PM	4:30 PM	Structure of Constitutive Relations in Porous Material Plasticity
		<i>Amine Benzerga, Texas A&M University</i>
		Speaker: Amine Benzerga (Invited Talk)
4:30 PM	4:50 PM	When truss-based architected materials can be described as continua, and when they cannot
		<i>Kevin Kraschewski, ETH Zurich; Greg Philipot, California Institute of Technology; Raphael Glaesener, ETH Zurich; Kaoutar Radi, ETH Zurich; Dennis Kochmann, ETH Zurich</i>
		Speaker: Dennis Kochmann (Invited Talk)
4:50 PM	5:10 PM	Prestressed Nanoarchitected Materials
		<i>Lucas Meza, University of Washington; Colean Wisont, Tesla; Robert Verdoes, University of Melbourne; Matt Leahy, University of Washington</i>
		Speaker: Lucas Meza (Invited Talk)

1.2 Eringen Medal Symposium		
Session: 3A, Room: MSC-2406B		
Session Chair(s): Nancy Sottos, n-sottos@illinois.edu		
9:45 AM	10:15 AM	From Nanotubes to Nanomine: My Collaborations with Cate
		<i>Linda Schadler, University of Vermont</i>
		Speaker: Linda Schadler (Keynote Talk)
10:15 AM	10:45 AM	Mapping the material properties of the extracellular matrix during development
		<i>Sarah Calve, University of Colorado Boulder</i>
		Speaker: Sarah Calve (Keynote Talk)
10:45 AM	11:05 AM	Machine Learning for the Experimental Mechanics of Structural Materials
		<i>Samantha Daly, University of California at Santa Barbara</i>
		Speaker: Samantha Daly (Invited Talk)

11:05 AM	11:25 AM	An Indentation-based Framework to Identify the Microscale Deformation Mechanisms in Collagenous Tissues
		<i>Amir Ostadi Moghaddam, Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign; Mahmuda Arshee, Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign; Amy Wagoner Johnson, Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Carle Illinois College of Medicine, University of Illinois at Urbana-Champaign, Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign</i>
		Speaker: Amir Ostadi Moghaddam (Invited Talk)
Session: 3B, Room: MSC-2406B		
Session Chair(s): Nancy Sottos, n-sottos@illinois.edu		
11:40 AM	12:00 PM	Inference of deformation mechanisms and constitutive response of soft material surrogates of biological tissue by data-driven variational system identification
		<i>Krishna Garikipati, University of Michigan; Zhenlin Wang, Apple Inc; Ellen Arruda, University of Michigan; Jon Estrada, University of Michigan</i>
		Speaker: Krishna Garikipati (Invited Talk)
12:00 PM	12:20 PM	Pathways to Commodity Mechanical Metamaterials – Auxeticity in Nonwoven Fiber Networks
		<i>Prateek Verma, Georgia Institute of Technology; Anselm Griffin, Georgia Institute of Technology; Meisha Shofner, Georgia Institute of Technology</i>
		Speaker: Meisha Shofner (Invited Talk)
12:20 PM	12:40 PM	Fabricating Strong Bioplastics from Algal Biological Matter: Challenges and Opportunities
		<i>Paul Grandgeorge, Department of Materials Science and Engineering, University of Washington; Andrew Jimenez, Department of Materials Science and Engineering, University of Washington; Ian Campbell, Department of Materials Science and Engineering, University of Washington; Hareesh Iyer, Department of Materials Science and Engineering, University of Washington; Michael Holden, Department of Materials Science and Engineering, University of Washington; Eleftheria Roumeli, Department of Materials Science and Engineering, University of Washington</i>
		Speaker: Eleftheria Roumeli (Invited Talk)
Session: 4A, Room: MSC-2406B		
Session Chair(s): Linda Schadler, Linda.Schadler@uvm.edu		
2:15 PM	2:35 PM	Emerging Fractal Potential Energy Landscape as the Origin of Activation Volume in Amorphous Solids
		<i>Yue Fan, University of Michigan, Ann Arbor</i>
		Speaker: Yue Fan (Invited Talk)
2:35 PM	2:55 PM	Determination of Critical Cellular Injury Thresholds for Detecting and Predicting Traumatic Brain Injuries
		<i>Luke Summey, University of Wisconsin-Madison; Annalise Daul, University of Wisconsin-Madison; Jessica Park, University of Wisconsin-Madison; Jamie Sergay, University of Wisconsin-Madison; Jing Zhang, University of Wisconsin-Madison; Christian Franck, University of Wisconsin-Madison</i>
		Speaker: Christian Franck (Invited Talk)
2:55 PM	3:15 PM	Soft Ionic Materials and Devices: Experiments, Equivalent Circuits, and Continuum Modeling
		<i>Meredith Silberstein, Cornell University; Nikola Bosnjak, Cornell University; Max Tepermeister, Cornell University; Xinyue Zhang, Cornell University</i>

		Speaker: Meredith Silberstein (Invited Talk)
3:15 PM	3:35 PM	Understanding time dependence in osmotically active, non-vascular-plant-inspired composites
		<i>Jeongeun Ryu, University of Illinois Urbana-Champaign; John Chen, University of Illinois Urbana-Champaign; Alexandra Spitzer, University of Illinois Urbana-Champaign; Amrita Kataruka, University of Illinois Urbana-Champaign; Shelby Hutchens, University of Illinois Urbana-Champaign</i>
		Speaker: Shelby Hutchens (Invited Talk)
3:35 PM	3:55 PM	Fast and Accurate Large-scale Ab Initio Calculations for Materials Modeling
		<i>Vikram Gavini, University of Michigan; Sambit Das, University of Michigan</i>
		Speaker: Vikram Gavini (Invited Talk)
Session: 4B, Room: MSC-2406B		
Session Chair(s): Linda Schadler, Linda.Schadler@uvm.edu		
4:10 PM	4:30 PM	In Situ Wear Study Reveals Role of Microstructure on Self-Sharpening Mechanism in Sea Urchin Teeth
		<i>Horacio Espinosa, Northwestern University; Alireza Zaheri, Northwestern University; Hoang Nguyen, Northwestern University; Nicolas Alderete, Northwestern University</i>
		Speaker: Horacio Espinosa (Invited Talk)
4:30 PM	4:50 PM	Cohesive Zone Modeling of Interphases
		<i>Kenneth Liechti, University of Texas; Noel Duckworth, Department of Aerospace Engineering and Engineering Mechanics The University of Texas at Austin Austin, TX 78712 USA; Kirill Rebrov, Oden Institute for Computational Engineering and Sciences The University of Texas at Austin Austin, TX 78712 USA; Gregory Rodin, Oden Institute for Computational Engineering and Sciences The University of Texas at Austin Austin, TX 78712 USA</i>
		Speaker: Kenneth Liechti (Invited Talk)
4:50 PM	5:10 PM	Engineering of Complexity in Biomimetic Nanocomposites
		<i>Nicholas Kotov, University of Michigan</i>
		Speaker: Nicholas Kotov (Invited Talk)

1.3 Engineering Science Medal Symposium**Session: 3A, Room: MSC-2405****Session Chair(s): Shelly Zhang, zhangxs@illinois.edu**

9:45 AM	10:05 AM	Learning from Multi-source Data Under Uncertainty
		<i>Mehdi Shishhebor, UCI; Sanaz Zanjani, UCI; Amin Yousefpour, UCI; Ramin Bostanabad, University of California, Irvine</i>
		Speaker: Ramin Bostanabad (Invited Talk)
10:05 AM	10:25 AM	A multi-physics design optimization framework for programmable magneto-active materials
		<i>Zhi Zhao, University of Illinois at Urbana Champaign; Xiaojia Shelly Zhang, University of Illinois at Urbana Champaign</i>
		Speaker: Xiaojia Shelly Zhang (Invited Talk)
10:25 AM	10:45 AM	Robust Topology Optimization of Electric Machines

		<i>Jiawei Tian, State University of New York at Stony Brook; Ran Zhuang, State University of New York at Stony Brook; Juan Cilia, GE Renewable Energy; Fang Luo, State University of New York at Stony Brook; Jon Longtin, State University of New York at Stony Brook; Shikui Chen, State University of New York at Stony Brook</i>
		Speaker: Shikui Chen (Invited Talk)
10:45 AM	11:05 AM	Quantification of Aleatoric Uncertainties in a Topological Spatial Domain
		<i>Hongyi Xu, University of Connecticut</i>
		Speaker: Hongyi Xu (Invited Talk)
11:05 AM	11:25 AM	On the importance of microstructure information in Bayesian materials design: PSP vs PP
		<i>Raymundo Arroyave, Department of Materials Science and Engineering, Texas A&M University; Danial Khatamsaz, Department of Mechanical Engineering, Texas A&M University; Abhilash Molkeri, Department of Materials Science and Engineering, Texas A&M University; Richard Couperthwaite, Department of Materials Science and Engineering, Texas A&M University; Jaylen James, Department of Materials Science and Engineering, Texas A&M University; Ankit Srivastava, Department of Materials Science and Engineering, Texas A&M University; Douglas Allaire, Department of Mechanical Engineering, Texas A&M University</i>
		Speaker: Raymundo Arroyave (Invited Talk)
Session: 3B, Room: MSC-2405		
Session Chair(s): Shelly Zhang, zhangxs@illinois.edu		
11:40 AM	12:00 PM	Computational and Data-Driven Design of Materials under Uncertainty
		<i>Pinar Acar, Virginia Tech; Arulmurugan Senthilnathan, Virginia Tech; Sheng Liu, Virginia Tech; Mahmudul Hasan, Virginia Tech; Kiara McMillan, Virginia Tech; Hengduo Zhao, Virginia Tech</i>
		Speaker: Pinar Acar (Invited Talk)
12:00 PM	12:20 PM	Simulation-based design optimization under uncertainty with computational fluid and solid mechanics applications
		<i>Anh Tran, Sandia National Laboratories; Yan Wang, Georgia Institute of Technology</i>
		Speaker: Anh Tran (Invited Talk)
12:20 PM	12:40 PM	Machine Learning-accelerated Molecular Design of High-temperature Polymers
		<i>Ying Li, University of Connecticut</i>
		Speaker: Ying Li (Invited Talk)
Session: 4A, Room: MSC-2405		
Session Chair(s): Raymundo Arroyave, raymundo.arroyave@tamu.edu		
2:15 PM	2:45 PM	Probabilistic learning for optimization
		<i>Roger Ghanem, University of Southern California</i>
		Speaker: Roger Ghanem (Keynote Talk)
2:45 PM	3:05 PM	Machine Learning and Artificial Intelligence in the Design Engineering Material Systems and Structures
		<i>Richard Malak, Texas A&M University</i>
		Speaker: Richard Malak (Invited Talk)
3:05 PM	3:25 PM	Advancing Autonomous Design via Bayesian Optimization over Problem Formulation Space
		<i>Douglas Allaire, Texas A&M University; Raymundo Arroyave, Texas A&M University; Joseph Wagner, Texas A&M University</i>
		Speaker: Douglas Allaire (Invited Talk)

Session: 4B, Room: MSC-2405		
Session Chair(s): Raymundo Arroyave, raymundo.arroyave@tamu.edu		
4:10 PM	4:30 PM	Machine Learning for Topology Optimization: Physics-based Learning Through an Independent Training Strategy
		<i>Fernando Vasconcelos da Senhora, Georgia Institute of Technology; Heng Chi, Siemens Corporation, Technology; Yuyu Zhang, Georgia Institute of Technology; Lucia Mirabella, Siemens Corporation, Technology; Tsz Ling Elaine Tang, Siemens Corporation, Technology; Glaucio Paulino, Princeton University</i>
		Speaker: Fernando Vasconcelos da Senhora (Invited Talk)
4:30 PM	4:50 PM	Multivariate Uncertainty Quantification
		<i>Xiaoping Du, Indiana University–Purdue University Indianapolis</i>
		Speaker: Xiaoping Du (Invited Talk)
4:50 PM	5:10 PM	Systematical Collision Avoidance Reliability Analysis and Characterization of Reliable System Operation for Autonomous Navigation Using the Dynamic Window Approach
		<i>Elnaz Asghari Torkamani, Rutgers University; Zhimin Xi, Rutgers University</i>
		Speaker: Zhimin Xi (Invited Talk)

Thematic Area 2. Biomechanics & Mechanobiology

2.2 Cell and Tissue Mechanics in Health and Disease		
Session: 3A, Room: MSC-2404		
Session Chair(s): Roland Kaunas, rkaunas@tamu.edu ; Farid Alisafaei, farid.alisafaei@njit.edu		
9:45 AM	10:15 AM	Simulating cardiomyocyte contractility and remodelling in a beating heart
		<i>Jamie Concannon, National University of Ireland Galway; Ryan Coleman, National University of Ireland Galway; Patrick McGarry, National University of Ireland Galway</i>
		Speaker: Patrick McGarry (Keynote Talk)
10:15 AM	10:45 AM	Improving cardiovascular “diseases-in-a-dish” with active materials
		<i>Adam Engler, UC San Diego</i>
		Speaker: Adam Engler (Keynote Talk)
10:45 AM	11:05 AM	Sarcomere-like structures prevent podocyte detachment and template synaptopodin-positive extensions
		<i>Hani Y Suleiman, Washington University School of Medicine</i>
		Speaker: Hani Suleiman (Invited Talk)
11:05 AM	11:25 AM	Wall Shear Stress Characteristics in Angiogenic Microvascular Networks
		<i>Peter Balogh, New Jersey Institute of Technology</i>
		Speaker: Peter Balogh (Invited Talk)
Session: 4A, Room: MSC-2404		
Session Chair(s): Roland Kaunas, rkaunas@tamu.edu ; Farid Alisafaei, farid.alisafaei@njit.edu		
2:15 PM	2:35 PM	Ablating microtissues: a new approach to link tissue mechanics to soft tissue repair
		<i>Jeroen Eyckmans, Boston University</i>
		Speaker: Jeroen Eyckmans (Invited Talk)
2:35 PM	2:55 PM	Matrix Reinforcement to Diminish Cartilage Degeneration
		<i>Jay Patel, Department of Orthopaedics, Emory University School of Medicine, Atlanta VA Medical Center; Michael Kowalski, Department of Orthopaedics, Emory University School of Medicine, Atlanta VA Medical Center</i>
		Speaker: Jay Patel (Invited Talk)
2:55 PM	3:15 PM	How does tricuspid valve remodeling affect its function: A computational investigation
		<i>Mrudang Mathur, University of Texas at Austin; Tomasz Timek, Spectrum Health; Manuel Rausch, University of Texas at Austin</i>
		Speaker: Manuel Rausch (Invited Talk)
3:15 PM	3:35 PM	Deciphering the Functional Relevance of 3D Genome Organization in Health and Disease
		<i>Rajan Jain, University of Pennsylvania</i>
		Speaker: Rajan Jain (Invited Talk)
3:35 PM	3:55 PM	Vascular Ehlers-Danlos Syndrome Patient-Derived Matrix Reveals Roles of Collagen III in ECM Assembly and Mechanics
		<i>William Polacheck, University of North Carolina at Chapel Hill; Elizabeth Doherty, University of North Carolina at Chapel Hill</i>
		Speaker: Elizabeth Doherty (Invited Talk)

Session: 4B, Room: MSC-2404		
Session Chair(s): Roland Kaunas, rkaunas@tamu.edu; Farid Alisafaei, farid.alisafaei@njit.edu		
4:10 PM	4:30 PM	Understanding the inelastic response of collagen fibrils: a viscoelastic-plastic constitutive model
		<i>Fernanda Fontenele, Cornell University; Nikolaos Bouklas, Cornell University</i>
		Speaker: Nikolaos Bouklas (Invited Talk)
4:30 PM	4:50 PM	Nonlinear strain feedback can create a rich set of spatial patterns among living cells
		<i>brian cox, gentleman scientist</i>
		Speaker: Brian Cox (Invited Talk)
4:50 PM	5:10 PM	Cervical Tissue Remodeling in Pregnancy and the Benefit of Rodent and Non-human Primate Models
		<i>Kristin Myers, Columbia University; Lei Shi, Columbia University; Nicole Lee, Columbia University; Shuyang Fang, Columbia University; Erin Louwagie, Columbia University; Joy Vink, Columbia University; Helen Feltovich, Intermountain Healthcare; Tim Hall, University of Wisconsin, Madison; Ivan Rosado-Mendez, University of Wisconsin, Madison; Mala Mahendroo, University of Texas Southwestern Medical Center</i>
		Speaker: Kristin Myers (Invited Talk)

2.3 Cell Mechanics, Biomechanics and Mechanobiology		
Session: 3A, Room: MSC-2502		
Session Chair(s): Alireza Sarvestani, sarvestani_a@mercer.edu		
9:45 AM	10:05 AM	Domain Aggregation and Associated Pore Growth in Lipid Membranes
		<i>Yue Liu, University of Michigan; Huajian Gao, Nanyang Technological University</i>
		Speaker: Yue Liu (Contributed Talk)
10:05 AM	10:25 AM	Boron Nitride Nanosheets Can Induce Water Channels Across Lipid Bilayers Leading to Lysosomal Permeabilization
		<i>Xuliang Qian, Nanyang Technological University</i>
		Speaker: Xuliang Qian (Contributed Talk)
10:25 AM	10:45 AM	Dynamics of I-BAR and actin mediated mechano-adaptation of cells
		<i>Nikhil Walani, Universitat Politècnica de Catalunya; Xarxa Quiroga, Institute for Bioengineering of Catalunya; Anabel-Lise Roux, Institute for Bioengineering of Catalunya; Pere-Roca Cusachs, Institute for Bioengineering of Catalunya, Universitat de Barcelona; Marino Arroyo, Universitat Politècnica de Catalunya, Centre Internacional de Metodologies Numèriques en Enginyeria, Institute for Bioengineering of Catalunya</i>
		Speaker: Nikhil Walani (Contributed Talk)
10:45 AM	11:05 AM	Theoretical and Computational Modelling of Cell-Cell Adhesion
		<i>Pradeep Bal, Universitat Politècnica de Catalunya; Guillermo Vilanova, Universitat Politècnica de Catalunya; Alejandro Torres-Sánchez, Universitat Politècnica de Catalunya; Marino Arroyo, Universitat Politècnica de Catalunya</i>
		Speaker: Pradeep Kumar Bal (Invited Talk)
11:05 AM	11:25 AM	Mechanics and microstructure underlying axonal deformation of neurons and neuronal injury
		<i>Debabrata Auddya, University of Wisconsin-Madison; Rahul Gulati, University of Wisconsin-Madison; Shiva Rudraraju, University of Wisconsin-Madison</i>

		Speaker: Debabrata Auddya (Invited Talk)
Session: 3B, Room: MSC-2502		
Session Chair(s): Alireza Sarvestani, sarvestani_a@mercer.edu		
11:40 AM	12:00 PM	Dynamics of Caveolar and Caveolin structures
		<i>Nikhil Walani, Universitat Politecnica de Catalunya; Guillermo Vilanova, Universitat Politecnica de Catalunya; Fidel Lolo, Centro Nacional de Investigaciones Cardiovasculares Madrid; Miguel Pozo, Centro Nacional de Investigaciones Cardiovasculares Madrid; Marino Arroyo, Universitat Politecnica de Catalunya, Institute for Bioengineering of Catalunya, Centre Internacional de Metodes Numerics en Enginyeria</i>
		Speaker: Nikhil Walani (Contributed Talk)
12:00 PM	12:20 PM	Theoretical and computational framework to investigate the role of cellular adhesion in epithelial mechanics
		<i>Maahi Talukder, Department of Mechanical Engineering, Virginia Tech; Sohan Kale, Department of Mechanical Engineering, Virginia Tech, Center for Soft Matter and Biological Physics, Virginia Tech</i>
		Speaker: Maahi Talukder (Contributed Talk)
12:20 PM	12:40 PM	Structural vs. Biological Variability: Analysis of Biaxial Mechano-adaptation of Vascular Smooth Muscle Cells
		<i>Ryan Mahutga, Department of Biomedical Engineering; University of Minnesota, Minneapolis, MN, USA; Patrick Alford, Department of Biomedical Engineering; University of Minnesota, Minneapolis, MN, USA</i>
		Speaker: Ryan Mahutga (Contributed Talk)
Session: 4A, Room: MSC-2502		
Session Chair(s): Alireza Sarvestani, sarvestani_a@mercer.edu		
2:15 PM	2:45 PM	Cells in 3D matrix: Order from randomness
		<i>M Taher Saif, University of Illinois at Urbana-Champaign</i>
		Speaker: M Taher Saif (Keynote Talk)
2:45 PM	3:15 PM	Mechanics of nuclear deformation in cells
		<i>Tanmay Lele, Texas A&M university; Richard Dickinson, University of Florida</i>
		Speaker: Tanmay Lele (Keynote Talk)
3:15 PM	3:35 PM	Thermodynamic Bases of Mechanotransduction at Intercellular Adherens Junctions
		<i>Alireza Sarvestani, Mercer University; Arsha Moorthy, Mercer University</i>
		Speaker: Alireza Sarvestani (Invited Talk)
3:35 PM	3:55 PM	Using brewery waste to clean water
		<i>Christos Athanasiou, Brown University; Patricia Stathatou, MIT Center of Bits and Atoms; Xuliang Qian, Nanyang Technological University; Neil Gershenfeld, MIT Center of Bits and Atoms; Huajian Gao, Nanyang Technological University</i>
		Speaker: Christos Athanasiou (Contributed Talk)
Session: 4B, Room: MSC-2502		
Session Chair(s): Alireza Sarvestani, sarvestani_a@mercer.edu		
4:10 PM	4:40 PM	Connecting cytoskeletal dynamics and tissue mechanics
		<i>Adam Ouzeri, Universitat Politecnica de Catalunya; Nimesh Chahare, Institute for Bioengineering of Catalonia (IBEC); Marco Pensalfini, Universitat Politecnica de Catalunya; Tom Golde, Institute for Bioengineering of Catalonia (IBEC); Sohan Kale, VirginiaTech;</i>

		<i>Alejandro Torres-Sánchez, Institute for Bioengineering of Catalonia (IBEC); Xavier Trepas, Institute for Bioengineering of Catalonia (IBEC); Marino Arroyo, Institute for Bioengineering of Catalonia (IBEC), Universitat Politècnica de Catalunya, Centre Internacional de Mètodes Numèrics en Enginyeria (CIMNE)</i>
		Speaker: Marino Arroyo (Keynote Talk)
4:40 PM	5:00 PM	Chiral rotation of cells upon one-way torsional drive
		<i>Xi Li, Zhejiang University; Bin Chen, Zhejiang University</i>
		Speaker: Bin Chen (Contributed Talk)

2.4 Mechanobiology of Disease		
Session: 4A, Room: Hotel-Laurel		
Session Chair(s): Tanmay Lele, tanmay.lele@tamu.edu		
2:15 PM	2:45 PM	Engineering approaches yield new insights into invasive brain tumors
		<i>Sanjay Kumar, University of California, Berkeley</i>
		Speaker: Sanjay Kumar (Keynote Talk)
2:45 PM	3:15 PM	Biomechanics of Therapy Induced Senescence and the Evolving Tumor Microenvironment
		<i>Michelle Dawson, Brown University; Carolina Mejia-Pena, Brown University; Amy Lee, Brown University; Matthew Perricone, Brown University</i>
		Speaker: Michelle Dawson (Keynote Talk)
3:15 PM	3:35 PM	Biomechanics of Epithelial Tissue Homeostasis, Collapse, and Eversion
		<i>Richard Dickinson, University of Florida; Purboja Purkayastha, Texas A&M University; Tanmay Lele, Texas A&M University</i>
		Speaker: Richard Dickinson (Invited Talk)
3:35 PM	3:55 PM	Collective Cell Behavior in 3D Cell Assemblies—3D Printed Structures, Random Aggregates and Perfectly Precise Arrays
		<i>Thomas Angelini, University of Florida</i>
		Speaker: Thomas Angelini (Invited Talk)
Session: 4B, Room: Hotel-Laurel		
Session Chair(s): Tanmay Lele, tanmay.lele@tamu.edu		
4:10 PM	4:40 PM	Understanding and Exploiting Cancer Mechanobiology
		<i>Adam Engler, UC San Diego</i>
		Speaker: Adam Engler (Keynote Talk)
4:40 PM	5:00 PM	Self-assembled 3D Tumor Models on a Novel Biomechanical Sensor for Investigating Physicochemical Processes in Cancer
		<i>Bashar Emon, Mechanical Science and Engineering, University of Illinois at Urbana-Champaign; M Taher A Saif, Mechanical Science and Engineering, University of Illinois at Urbana-Champaign</i>
		Speaker: Bashar Emon (Contributed Talk)

2.5 Mechanics of Engineered Living Materials		
Session: 3A, Room: Hotel-Laurel		
Session Chair(s): Jing Yan, jing.yan@yale.edu		
9:45 AM	10:05 AM	The growth and form of natural honeycomb
		<i>Padmanabha Saikia, University of Cambridge, Technische Universität Berlin; Angkur Shaikeea, University of Cambridge; Vikram Deshpande, University of Cambridge</i>
		Speaker: Padmanabha Saikia (Contributed Talk)
10:05 AM	10:25 AM	Digitally programmable manufacturing of living materials grown from biowaste
		<i>Suitu Wang, Texas A&M University; Laura Rivera-Tarazona, Texas A&M University; Mustafa Abdelrahman, Texas A&M University; Taylor Ware, Texas A&M University</i>
		Speaker: Suitu Wang (Contributed Talk)
10:25 AM	10:45 AM	Biofilms as active materials
		<i>Qiating Zhang, Yale University; Danh Nguyen, University of Connecticut; Alexis Moreau, Yale University; Ying Li, University of Connecticut; Jing Yan, Yale University</i>
		Speaker: Jing Yan (Invited Talk)

2.6 Injury Biomechanics Symposium		
Session: 3B, Room: Hotel-Laurel		
Session Chair(s): Amy Dagro, amy.m.dagro.civ@army.mil; Reuben Kraft, rhk12@psu.edu		
11:40 AM	12:00 PM	Development of Subject-Specific 3D Human Head Models Based on a Nonlinear Visco-Hyperelastic Constitutive Framework
		<i>Kshitiz Upadhyay, Johns Hopkins University; Ahmed Alshareef, Johns Hopkins University; Andrew Knutsen, The Henry M. Jackson Foundation for the Advancement of Military Medicine; Curtis Johnson, University of Delaware; Aaron Carass, Johns Hopkins University; Philip Bayly, Washington University in St. Louis; Dzung Pham, The Henry M. Jackson Foundation for the Advancement of Military Medicine; Jerry Prince, Johns Hopkins University; K.T. Ramesh, Johns Hopkins University</i>
		Speaker: Kshitiz Upadhyay (Contributed Talk)
12:00 PM	12:20 PM	Prediction of facial overpressure using body worn sensors and machine learning algorithms in military blast environments
		<i>Reuben Kraft, Penn State University; Charles Dye, Penn State University; Jackson Mackay, Penn State University; Anish Roy, Indian Institute of Technology, Delhi</i>
		Speaker: Reuben Kraft (Contributed Talk)

Thematic Area 3. Data Science & Machine Learning

3.1 Advancing Multi-scale Modeling Capabilities in Metal Additive MFG through Machine Learning		
Session: 4B, Room: MSC-2505		
Session Chair(s): Jobin Joy, jobinjoy@tamu.edu		
9:45 AM	10:05 AM	Physics-informed machine learning for metal additive manufacturing: processing modeling and powder spattering <i>Qiming Zhu, University of Illinois at Urbana-Champaign; Xuxiao Li, Global Engineering and Materials, Inc.; Jim Lua, Global Engineering Materials, Inc; Nam Phan, Naval Air Systems Command; Jinhui Yan, University of Illinois at Urbana-Champaign</i>
		Speaker: Jinhui Yan (Contributed Talk)
10:05 AM	10:25 AM	Obtaining all Material Sensitivities of a Mechanical Model from a Single Simulation <i>Joseph Carter, Brigham Young University; Christopher Stubbs, Fairleigh Dickinson University; Douglas Cook, Brigham Young University</i>
		Speaker: Joseph Carter (Contributed Talk)
10:25 AM	10:45 AM	A Robotic Path Planning Tool for the Automated Design of Compositionally Graded Alloys <i>Marshall Allen, Department of Mechanical Engineering, Texas A&M University; Jonathan Frutschy, Department of Mechanical Engineering, Texas A&M University; Raymundo Arroyave, Department of Materials Science & Engineering, Texas A&M University, Department of Mechanical Engineering, Texas A&M University; Richard Malak, Department of Mechanical Engineering, Texas A&M University</i>
		Speaker: Marshall Allen (Contributed Talk)
3.3 Data-Driven Approaches for Complex Multiphysics Systems, Structures, and Materials		
Session: 3A, Room: MSC-2505		
Session Chair(s): Hongyi Xu, hongyi.3.xu@uconn.edu		
9:45 AM	10:05 AM	Neural Network Models of Phase Field Simulations <i>Haiying Yang, Texas A&M University; Michael Demkowicz, Texas A&M University</i>
		Speaker: Haiying Yang (Contributed Talk)
10:05 AM	10:25 AM	Solar Swarms for Urban Energy Harvesting: A Modeling Approach <i>Andrés Arias-Rosales, Carnegie Mellon University; Philip LeDuc, Carnegie Mellon University</i>
		Speaker: Andrés Arias-Rosales (Contributed Talk)
10:25 AM	10:45 AM	Neural Networks for Model Order Reduction in Simulations of Structural Mechanics: Slinky as a Test Case <i>Qiaofeng Li, University of California, Los Angeles; Dezhong Tong, University of California, Los Angeles; Vwani Roychowdhury, University of California, Los Angeles; Mohammad Khalid Jawed, University of California, Los Angeles</i>
		Speaker: Mohammad Khalid Jawed (Invited Talk)
10:45 AM	11:05 AM	Graph Neural Networks as Structure-Property Model for Architected Materials <i>Paul Meyer, Department of Mechanical and Process Engineering, Swiss Federal Institute of Technology (ETH) Zurich; Colin Bonatti, Department of Mechanical and Process Engineering, Swiss Federal Institute of Technology (ETH) Zurich; Thomas Tancogne-Dejean,</i>

		<i>Department of Mechanical and Process Engineering, Swiss Federal Institute of Technology (ETH) Zurich; Dirk Mohr, Department of Mechanical and Process Engineering, Swiss Federal Institute of Technology (ETH) Zurich</i>
		Speaker: Paul Meyer (Contributed Talk)
11:05 AM	11:25 AM	Predicting Mechanically Driven Emergent Behavior from Graph Neural Networks
		<i>Peerasait Prachaseree, Boston University; Emma Lejeune, Boston University</i>
		Speaker: Peerasait Prachaseree (Contributed Talk)
Session: 3B, Room: MSC-2505		
Session Chair(s): Hongyi Xu, hongyi.3.xu@uconn.edu		
11:40 AM	12:00 PM	Machine learning-assisted discovery of novel Ni-rich NiTiHfZr multi-component shape memory alloys
		<i>John Broucek, Department of Materials Science and Engineering, Texas A&M University; William Trehern, Department of Materials Science and Engineering, Texas A&M University; Daniel Salas, Department of Materials Science and Engineering, Texas A&M University; Ibrahim Karaman, Department of Materials Science and Engineering, Texas A&M University</i>
		Speaker: John Broucek (Contributed Talk)
12:00 PM	12:20 PM	Towards Out of Distribution Generalization for Problems in Mechanics
		<i>Lingxiao Yuan, Boston University; Emma Lejeune, Boston University; Harold Park, Boston University</i>
		Speaker: Lingxiao Yuan (Contributed Talk)
12:20 PM	12:40 PM	A nonlinear substructure method for efficient reduced-order structural modeling based on a classical plasticity framework
		<i>Patrick Walgren, Texas A&M University; Darren Hartl, Texas A&M University</i>
		Speaker: Patrick Walgren (Contributed Talk)
Session: 4A, Room: MSC-2505		
Session Chair(s): Juner Zhu, ZHUJUNER@mit.edu		
2:15 PM	2:35 PM	Optimization of an Optical Shutter using Machine Learning
		<i>Benjamin Jasperson, University of Illinois at Urbana-Champaign; Harley Johnson, University of Illinois at Urbana-Champaign</i>
		Speaker: Benjamin Jasperson (Contributed Talk)
2:35 PM	2:55 PM	NN-EUCLID: Deep Learning Hyperelasticity Without Stress Data
		<i>Prakash Thakolkaran, Delft University of Technology; Akshay Joshi, Delft University of Technology; Yiwen Zheng, Delft University of Technology; Moritz Flaschel, ETH Zurich; Laura De Lorenzis, ETH Zurich; Siddhant Kumar, Delft University of Technology</i>
		Speaker: Prakash Thakolkaran (Contributed Talk)
2:55 PM	3:15 PM	Geometric Modeling and System Identification Toward Efficient Reduced-order Nonlinear Static Aeroelasticity Analysis
		<i>Trent White, Texas A&M University; Darren Hartl, Texas A&M University</i>
		Speaker: Trent White (Contributed Talk)

3.4 Data-driven and Machine-learning based Mechanics of Materials		
Session: 3A, Room: MSC-1400		
Session Chair(s): Miguel Bessa, M.A.Bessa@tudelft.nl		
9:45 AM	10:15 AM	Machine Learning Accelerated, High Throughput, Multi-Objective Optimization of Multiprincipal Element Alloys
		<i>Tian Guo, University of Maryland, College Park; Lianping Wu, University of Maryland, College Park; Teng Li, University of Maryland, College Park</i>
		Speaker: Teng Li (Keynote Talk)
10:15 AM	10:45 AM	EUCLID: Learning material models without stress data
		<i>Siddhant Kumar, Delft University of Technology; Moritz Flaschel, ETH Zurich; Prakash Thakolkaran, Delft University of Technology; Akshay Joshi, Delft University of Technology; Laura De Lorenzis, ETH Zurich</i>
		Speaker: Siddhant Kumar (Keynote Talk)
10:45 AM	11:05 AM	Automatedly Discovering Simplified Governing Equations for Applied Mechanics Problems from Simulated Data
		<i>Hanqing Jiang, Westlake University; Yong Wang, Zhejiang University</i>
		Speaker: Hanqing Jiang (Contributed Talk)
11:05 AM	11:25 AM	Data-Driven Discovery of Computationally Complex Ceramics For Extreme Environments
		<i>Ghatu Subhash, University of Florida</i>
		Speaker: Ghatu Subhash (Contributed Talk)
Session: 3B, Room: MSC-1400		
Session Chair(s): Steve Sun, wsun@columbia.edu		
11:40 AM	12:00 PM	Predicting multiple crack propagation and coalescence using graph neural networks
		<i>Roberto Perera, Auburn University; Vinamra Agrawal, Auburn University</i>
		Speaker: Vinamra Agrawal (Contributed Talk)
12:00 PM	12:20 PM	Architected Disordered Truss Metamaterials: Graph Learning meets Statistical Physics
		<i>Konstantinos Karapiperis, Mechanics and Materials Lab, Department of Mechanical and Process Engineering, ETH Zurich; Dennis Kochmann, Mechanics and Materials Lab, Department of Mechanical and Process Engineering, ETH Zurich</i>
		Speaker: Konstantinos Karapiperis (Contributed Talk)
12:20 PM	12:40 PM	Accelerating Random Heterogeneous Material Design via deep learning: A physically-aware approach applied to electro-active composites
		<i>Azadeh Sheidaei, Iowa state university; Mohammad Hashemi, Iowa state university; Khiem Nguyen, University of Glasgow</i>
		Speaker: Azadeh Sheidaei (Contributed Talk)
Session: 4A, Room: MSC-1400		
Session Chair(s): Nikolaos Bouklas, nb589@cornell.edu		
2:15 PM	2:35 PM	Data-driven Discovery of Equations Governing Ultrasonic Wave Motion
		<i>Abigail Schmid, University of Colorado Boulder Department of Civil, Environmental and Architectural Engineering; Fatemeh Pourahmadian, University of Colorado Boulder Department of Civil, Environmental and Architectural Engineering; Alireza Doostan, University of Colorado Boulder Ann & H.J. Smead Department of Aerospace Engineering Sciences</i>

		Speaker: Abigail Schmid (Contributed Talk)
2:35 PM	2:55 PM	Accurate prediction of grain boundary properties using machine learning and strain functional descriptors
		<i>Avanish Mishra, Theoretical Division (T-1), Los Alamos National Laboratory, Los Alamos, NM, 87545; Sumit Suresh, Materials Science and Technology (MST-8), Los Alamos National Laboratory, Los Alamos, NM, 87545; Khanh Dang, Materials Science and Technology (MST-8), Los Alamos National Laboratory, Los Alamos, NM, 87545; Saryu Fensin, Materials Science and Technology (MST-8), Los Alamos National Laboratory, Los Alamos, NM, 87545; Edward Kober, Theoretical Division (T-1), Los Alamos National Laboratory, Los Alamos, NM, 87545; Nithin Mathew, Theoretical Division (T-1), Los Alamos National Laboratory, Los Alamos, NM, 87545</i>
		Speaker: Avanish Mishra (Contributed Talk)
2:55 PM	3:15 PM	Role of length-scale in machine learning based image analysis of fracture surfaces
		<i>Xinzhu Zheng, Texas A&M University, College Station, TX, USA; Bekassyl Battalgazy, Texas A&M University, College Station, TX, USA; Abhilash Molkeri, Texas A&M University, College Station, TX, USA; Shmuel Osovski, Texas A&M University, College Station, TX, USA; Ankit Srivastava, Texas A&M University, College Station, TX, USA</i>
		Speaker: Bekassyl Battalgazy (Contributed Talk)
3:15 PM	3:35 PM	Machine-Learned Surrogate Models for Threaded Fastener Geometries Subjected to Multiaxial Loadings
		<i>John Mersch, Sandia National Laboratories; Eric Parish, Sandia National Laboratories; Chi Hoang, Sandia National Laboratories; Tim Shelton, Sandia National Laboratories; Payton Lindsay, Sandia National Laboratories</i>
		Speaker: John Mersch (Contributed Talk)
3:35 PM	3:55 PM	Probabilistic Calibration of Underdetermined Material Models Using a Variational Autoencoder-Based Neural Pipeline
		<i>Liam Mackin, ATA Engineering; David Najera, ATA Engineering</i>
		Speaker: Liam Mackin (Contributed Talk)
Session: 4B, Room: MSC-1400		
Session Chair(s): Miguel Bessa, M.A.Bessa@tudelft.nl		
4:10 PM	4:30 PM	Phase-Field Fracture Modeling using Physics-Informed Deep Learning
		<i>Manav Manav, ETH Zurich; Roberto Molinaro, ETH Zurich; Siddhartha Mishra, ETH Zurich; Laura De Lorenzis, ETH Zurich</i>
		Speaker: Manav Manav (Contributed Talk)
4:30 PM	4:50 PM	High-throughput Generation of Three-dimensional Graphene Metamaterials and Property Quantification Using Machine Learning
		<i>Zhenze Yang, Massachusetts Institute of Technology; Markus Buehler, Massachusetts Institute of Technology</i>
		Speaker: Zhenze Yang (Contributed Talk)
4:50 PM	5:10 PM	Using Neural Networks to Explore the Effects of Topology and Structural Hierarchy on Energy Absorption in Bio-inspired Honeycombs
		<i>Shashank Kushwaha, University of Illinois Urbana-Champaign; Junyan He, University of Illinois Urbana-Champaign; Diab Abueidda, University of Illinois Urbana-Champaign; Iwona Jasiuk, University of Illinois Urbana-Champaign</i>
		Speaker: Shashank Kushwaha (Contributed Talk)

3.7 Uncertainty Quantification: An Interactive Symposium on Applications, Theory, and Education		
Session: 3A, Room: MSC-1403		
Session Chair(s): Douglas Cook, ddc971@byu.edu		
9:45 AM	10:05 AM	Predicting parametric spatiotemporal dynamics by multi-resolution PDE structure-preserved deep learning
		<i>Xin-yang Liu, University of Notre Dame; Hao Sun, Renming University of China; Jian-xun Wang, University of Notre Dame</i>
		Speaker: Xinyang Liu (Invited Talk)
10:05 AM	10:25 AM	Bayesian neural networks for weak solution of PDEs with uncertainty quantification
		<i>Xiaoxuan Zhang, University of Michigan, Ann Arbor; Krishna Garikipati, University of Michigan, Ann Arbor</i>
		Speaker: Krishna Garikipati (Invited Talk)
10:25 AM	10:45 AM	Bayesian Inference of Plastic Properties of Solids from Indentation
		<i>Yupeng Zhang, Northwestern University; Alan Needleman, Texas A&M University</i>
		Speaker: Yupeng Zhang (Invited Talk)
10:45 AM	11:05 AM	Interlaced Characterization and Calibration of Elastoplastic Constitutive Models
		<i>Daniel Seidl, Sandia National Laboratories; Denielle Ricciardi, Sandia National Laboratories; Brian Lester, Sandia National Laboratories; Amanda Jones, Sandia National Laboratories; Elizabeth Jones, Sandia National Laboratories</i>
		Speaker: Daniel Seidl (Invited Talk)
11:05 AM	11:25 AM	Comparative Analysis of Consolidation Methods for Benchmark Selection in Nuclear Criticality Safety
		<i>Jeongwon Seo, Purdue University</i>
		Speaker: Jeongwon Seo (Invited Talk)
Session: 3B, Room: MSC-1403		
Session Chair(s): Kathleen Schmidt, schmidt41@lnl.gov		
11:40 AM	12:00 PM	Calibration and Uncertainty Propagation of Multiaxially Loaded Threaded Fasteners
		<i>John Mersch, Sandia National Laboratories; Paul Miles, Sandia National Laboratories; George Orient, Sandia National Laboratories</i>
		Speaker: John Mersch (Invited Talk)
12:00 PM	12:20 PM	Quantifying Uncertainties in Multiscale Modeling of Materials
		<i>Xingsheng Sun, University of Kentucky</i>
		Speaker: Xingsheng Sun (Invited Talk)
12:20 PM	12:40 PM	Improving Uncertainty Quantification of Interatomic Potentials using Sloppy Model Analysis
		<i>Yonatan Kurniawan, Brigham Young University; Mark Transtrum, Brigham Young University; Cody Petrie, Brigham Young University; Dylan Bailey, Brigham Young University</i>
		Speaker: Yonatan Kurniawan (Invited Talk)
Session: 4A, Room: MSC-1403		
Session Chair(s): Daniel (Tom) Seidl, dtseidl@sandia.gov		
2:15 PM	2:35 PM	A Practical Application of Global Sensitivity Analysis for Stochastic Epidemiology Models in Support of Policy Decisions
		<i>Erin Acquesta, Sandia National Laboratories; Katherine Klise, Sandia National Laboratories; Walt Beyeler, Sandia National Laboratories; Patrick Finley, Sandia National Laboratories; Monear Makvandi, Sandia National Laboratories</i>

		Speaker: Erin Acquesta (Invited Talk)
2:35 PM	2:55 PM	Sequential Experimental Design for Materials Strength Model Calibration <i>Kathleen Schmidt, Lawrence Livermore National Laboratory; William Schill, Lawrence Livermore National Laboratory; Matthew Nelms, Lawrence Livermore National Laboratory; Nathan Barton, Lawrence Livermore National Laboratory</i>
		Speaker: Kathleen Schmidt (Invited Talk)
2:55 PM	3:15 PM	High-Dimensional Uncertainty Quantification in Overparameterized Regimes <i>Katiana Kontolati, Johns Hopkins University; Somdatta Goswami, Brown University; George Karniadakis, Brown University; Michael Shields, Johns Hopkins University</i>
		Speaker: Katiana Kontolati (Invited Talk)
3:15 PM	3:35 PM	Goal-Oriented Optimal Experimental Design for Nonlinear Physical Systems <i>Shijie Zhong, Shanghai Jiao Tong University; Wanggang Shen, University of Michigan; Thomas Catanach, Sandia National Laboratories; Xun Huan, University of Michigan</i>
		Speaker: Xun Huan (Invited Talk)
3:35 PM	3:55 PM	A Hierarchical and Mass-Normalized Approach for Assessing the Influence (Sensitivity) of Geometric Parameters in Mechanical Systems <i>Ryan Hall, Brigham Young University; Douglas Cook, Brigham Young University</i>
		Speaker: Douglas Cook (Contributed Talk)
Session: 4B, Room: MSC-1403		
Session Chair(s): Katiana Kontalati, kontolati@jhu.edu		
4:10 PM	4:30 PM	Bayesian neural networks for weak solution of PDEs with uncertainty quantification <i>Krishna Garikipati, University of Michigan; Xiaoxuan Zhang, University of Michigan</i>
		Speaker: Krishna Garikipati (Contributed Talk)
4:30 PM	4:50 PM	Deep Convolutional Ritz Method: Parametric PDE surrogates without labeled data <i>Jan Niklas Fuhg, Cornell University; Arnav Karmarkar, Cornell University; Teeratorn Kadeethum, Sandia National Labs; Hongkyu Yoon, Sandia National Labs; Nikolaos Bouklas, Cornell University</i>
		Speaker: Jan Niklas Fuhg (Contributed Talk)
4:50 PM	5:10 PM	Uncertainty reduction of isotopic prediction using PCM validation method <i>Shiming Yin, Purdue University; Dongli Huang, Purdue University; Hany Abdel-Khalik, Purdue University</i>
		Speaker: Shiming Yin (Contributed Talk)

Thematic Area 4. Fluid & Granular

4.1 Computational Fluid Dynamics for Engineering Applications		
Session: 3A, Room: Hotel-Shield		
Session Chair(s): Paul Cizmas, cizmas@tamu.edu		
9:45 AM	10:05 AM	Simulations of left ventricular flow by integrating moving boundary technique and magnetic resonance image registration
		<i>Tanmay Mukherjee, Department of Biomedical Engineering, Texas A&M University, College Station, TX 77840; Reza Avazmohammadi, Department of Biomedical Engineering, Texas A&M University, College Station, TX 77840, Department of Mechanical Engineering, Texas A&M University, College Station, TX 77840</i>
		Speaker: Tanmay Mukherjee (Contributed Talk)
10:05 AM	10:25 AM	The challenges of simulating the near-field flow for sonic boom prediction
		<i>Paul Cizmas, Texas A&M University</i>
		Speaker: Justin Schoppe (Contributed Talk)
10:25 AM	10:45 AM	Gas Transport Networks: Numerical Solution of Steady-State Flow Equations
		<i>Shriram Srinivasan, Los Alamos National Laboratory</i>
		Speaker: Shriram Srinivasan (Contributed Talk)

4.3 Laser-based Methods for High-speed and Reacting Flows Diagnostics		
Session: 3B, Room: Hotel-Shield		
Session Chair(s): Richard Miles, rmiles@tamu.edu		
11:40 AM	12:00 PM	Aero-optical effects as non-intrusive diagnostics tool
		<i>Stanislav Gordeyev, University of Notre Dame</i>
		Speaker: Stanislav Gordeyev (Invited Talk)
12:00 PM	12:20 PM	Acetone PLIF visualization of plasma-assisted mixing in supersonic flow
		<i>Sergey Leonov, University of Notre Dame; Skye Elliott, GE Research Center; Philip Lax, University of Notre Dame</i>
		Speaker: Sergey Leonov (Invited Talk)
12:20 PM	12:40 PM	Characterization of Thermal Non-Equilibrium in a Hypersonic Boundary Layer
		<i>Ashley Moran, Texas A&M University; Zachary Buen, Texas A&M University; Rodney Bowersox, Texas A&M University; Simon North, Texas A&M University</i>
		Speaker: Ashley Moran (Contributed Talk)
Session: 4A, Room: Hotel-Shield		
Session Chair(s): Sergey B Leonov, sleonov@nd.edu		
2:15 PM	2:45 PM	Slow Light Imaging Spectroscopy and its Promise for High-speed and Reacting Flow Diagnostics
		<i>Richard Miles, Texas A&M University; Arthur Dogariu, Texas A&M University; Christopher Limbach, Texas A&M University; James Creel, Texas A&M University; Junhwi Bak, Texas A&M University; Amirhossein Abbasszadehrad, Texas A&M University; Anuj Rekhy, Texas A&M University; Boris Leonov, Texas A&M University</i>

		Speaker: Richard Miles (Keynote Talk)
2:45 PM	3:05 PM	Temporal and spatial mapping of neutral atom density in RF-heated plasmas using fs-TALIF
		<i>Arthur Dogariu, Texas A&M University Aerospace Engineering; Eugene Evans, Princeton Plasma Physics Lab; Sangeeta Vinoth, Princeton Plasma Physics Lab; Samuel Cohen, Princeton Plasma Physics Lab</i>
		Speaker: Arthur Dogariu (Invited Talk)
3:05 PM	3:25 PM	Laser interferometry and optomechanical inertial sensing technologies
		<i>Felipe Guzman, Texas A&M University</i>
		Speaker: Felipe Guzman (Invited Talk)
Session: 4B, Room: Hotel-Shield		
Session Chair(s): Stanislav Gordeyev, sgordeye@nd.edu		
4:10 PM	4:30 PM	Flame Kernel Initiation Studies in Aluminum Dust Clouds Inside a Minimum Ignition Energy Testing Device
		<i>Christian Schweizer, Texas A&M University; Chad Mashuga, Texas A&M University; Waruna Kulatilaka, Texas A&M University</i>
		Speaker: Christian Schweizer (Contributed Talk)
4:30 PM	4:50 PM	Velocity and Temperature Measurements of a Hypersonic Boundary Layer Using the VENOM Technique
		<i>Madeline Smotzer, Texas A&M University; Ashley Moran, Texas A&M University; Casey Broslawski, Texas A&M University; Zachary Buen, Texas A&M University; Dr. Rodney Bowersox, Texas A&M University; Dr. Simon North, Texas A&M University</i>
		Speaker: Madeline Smotzer (Contributed Talk)

Thematic Area 5. Manufacturing & Infrastructure

5.2 Advanced Manufacturing: Materials, Mechanics, Processing and Data		
Session: 3A, Room: MSC-2503		
Session Chair(s): Satish Bukkapatnam, satish@tamu.edu; Mohamed El Mansori, mohamed.elmansori@ensam.eu		
9:45 AM	10:05 AM	A Framework for Printability Maps in Laser Powder Bed Fusion of AISI 316L Stainless Steel
		<i>Muhammad Mahmood, Texas A&M University at Qatar; Asif Ur Rehman, Gazi University; Marwan Khraisheh, Texas A&M University - Qatar</i>
		Speaker: Marwan Khraisheh (Invited Talk)
10:05 AM	10:25 AM	Optimal and continuous multi-lattice embedding
		<i>Emily Sanders, Georgia Institute of Technology; Anderson Pereira, Pontifical Catholic University of Rio de Janeiro; Glaucio Paulino, Princeton University</i>
		Speaker: Emily Sanders (Invited Talk)
10:25 AM	10:45 AM	Optimally-tailored spinodal architected materials for multiscale design and manufacturing
		<i>Fernando Senhora, Georgia Institute of Technology; Emily Sanders, Georgia Institute of Technology; Glaucio Paulino, Princeton University</i>
		Speaker: Emily Sanders (Invited Talk)
10:45 AM	11:05 AM	Fatigue and corrosion fatigue of additively manufactured 18Ni-C300 maraging steel enhanced by post-treatments
		<i>Apostolos Arvanitidis, Physical Metallurgy Laboratory, Dept. of Mechanical Engineering, School of Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece, Center for Research & Development of Advanced Materials (CERDAM), Aristotle University of Thessaloniki (AUTH) and Texas A&M Engineering Experiment Station (TEES); Fotis Kazelis, Physical Metallurgy Laboratory, Dept. of Mechanical Engineering, School of Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; Homero Castaneda, National Corrosion and Materials Reliability Center, Materials Science and Engineering, Texas A&M University, College Station, TX 77843; Nikolaos Michailidis, Physical Metallurgy Laboratory, Dept. of Mechanical Engineering, School of Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece, Center for Research & Development of Advanced Materials (CERDAM), Aristotle University of Thessaloniki (AUTH) and Texas A&M Engineering Experiment Station (TEES)</i>
		Speaker: Nikolaos Michailidis (Invited Talk)
11:05 AM	11:25 AM	Milling of Aluminum Surfaces for AI-based Proactive Quality Control Measured by on-machine Chromatic Confocal Technology
		<i>Ricardo Knoblauch, Arts et Metiers Institute of Technology; Mohamed Elmansori, Arts et Metiers Institute of Technology; Cosimi Corleto, Stil Marposs</i>
		Speaker: Ricardo Knoblauch (Invited Talk)
Session: 3B, Room: MSC-2503		
Session Chair(s): Satish Bukkapatnam, satish@tamu.edu; Mohamed El Mansori, mohamed.elmansori@ensam.eu		
11:40 AM	12:00 PM	Embedding Information in Additively Manufactured Metals via Magnetic Property Grading for Traceability and Counterfeiting Prevention
		<i>Daniel Salas, Department of Materials Science and Engineering, Texas A&M University, College Station, TX, USA; Deniz Ebeperi, Department of Materials Science and Engineering, Texas A&M University, College Station, TX, USA; Richard Malak, Department of</i>

		<i>Mechanical Engineering, Texas A&M University, College Station, TX, USA; Raymundo Arróyave, Department of Materials Science and Engineering, Texas A&M University, College Station, TX, USA; Ibrahim Karaman, Department of Materials Science and Engineering, Texas A&M University, College Station, TX, USA</i>
		Speaker: Daniel Salas (Contributed Talk)
12:00 PM	12:20 PM	Sustainable Manufacturing of Water Treatment Membranes: Transforming End-of-Life Reverse Osmosis (RO) Membranes into high Performing Nanofiltration (NF) Membranes
		<i>Abedalkader Alkhouzaam, Texas A&M University at Qatar; Marwan Khraisheh, Texas A&M University - Qatar</i>
		Speaker: Marwan Khraisheh (Invited Talk)
12:20 PM	12:40 PM	Thin Steel Strip Production using Metal Peeling
		<i>Parth Dave, Texas A&M University; Aditya Yalamanchili, Texas A&M University; Ravi Srivatsa, Texas A&M University; Ashish Devkota, Texas A&M University; Matthew Stahr, Texas A&M University; Prahakar Pagilla, Texas A&M University; Dinakar Sagapuram, Texas A&M University</i>
		Speaker: Parth Dave (Contributed Talk)
Session: 4A, Room: MSC-2503		
Session Chair(s): Nikos Michailidis, nmichail@tamu.edu		
2:15 PM	2:45 PM	From Formability to Useability: Damage Controlled Forming Processes
		<i>A. Erman Tekkaya, TU Dortmund University, Institute of Forming Technology and Lightweight Components</i>
		Speaker: A. Erman Tekkaya (Keynote Talk)
2:45 PM	3:05 PM	Manufacturing of complex 3D surfaces inspired by biological growth mechanics
		<i>Jiajia Shen, University of Bristol, UK; Rainer Groh, University of Bristol</i>
		Speaker: Rainer Groh (Contributed Talk)
3:05 PM	3:25 PM	Crashworthiness Performance and Energy Absorption of a Bio-Inspired Prepreg Carbon Fiber Composite Structures
		<i>Fatima Alabtah, Texas A&M University at Qatar; Elsadiq Mahdi, Qatar University; Marwan Khraisheh, Texas A&M University - Qatar</i>
		Speaker: Marwan Khraisheh (Contributed Talk)
3:25 PM	3:55 PM	An Inelastic Model with Embedded Bounce-Back Control for 3D Printing with Cementitious Materials
		<i>Arif Masud, University of Illinois at Urbana-Champaign; Ignasius Wijaya, University of Illinois at Urbana-Champaign</i>
		Speaker: Arif Masud (Keynote Talk)
Session: 4B, Room: MSC-2503		
Session Chair(s): Nikos Michailidis, nmichail@tamu.edu		
4:10 PM	4:30 PM	3D Nanoprinting with Nanocluster-Based Photoresists
		<i>Wendy Gu, Stanford University; Qi Li, Stanford University; John Kulikowski, Stanford University; David Doan, Stanford University</i>
		Speaker: Wendy Gu (Contributed Talk)
4:30 PM	4:50 PM	Microstructure and Mechanical Deformation of Chemically-Derived, Additively Manufactured nano-sized Ni
		<i>Wenxin Zhang, California Institute of Technology; Julia Greer, California Institute of Technology</i>
		Speaker: Wenxin Zhang (Contributed Talk)
4:50 PM	5:10 PM	Development of Methods to Evaluate Printability of Concrete Materials for Additive Manufacturing.

		<i>Youssef Mortada, Texas A&M University - Material Science and Engineering Department; Malek Mohammad, Texas A&M University at Qatar; Bilal Mansoor, Texas A&M University at Qatar - Mechanical Engineering Department; Zachary Grasley, Texas A&M University - Civil & Environmental Engineering; Eyad Masad, Texas A&M University at Qatar - Mechanical Engineering Department</i>
		Speaker: Youssef Mortada (Contributed Talk)

5.3 Mechanics and Materials for Infrastructure and Construction		
Session: 3A, Room: MSC-2504		
Session Chair(s): Xijun (Jeff) Shi, xijun.shi@txstate.edu; Shadi Saadeh, shadi.saadeh@csulb.edu		
9:45 AM	10:05 AM	Use of Simplified Viscoelastic Continuum Damage Approach to Evaluate the Fatigue Performance of Asphalt Binders at the Sand Asphalt Mortar Scale
		<i>Joao Pioli, Sao Carlos School of Engineering, University of Sao Paulo; Adalberto Faxina, Sao Carlos School of Engineering, University of Sao Paulo; Jamilla Teixeira, University of Nebraska - Lincoln</i>
		Speaker: Jamilla Teixeira (Invited Talk)
10:05 AM	10:25 AM	Digital Image Correlation of Desiccation Behavior in Basalt Microfiber-reinforced Bentonite as an Engineered Barrier Material for Geological Repository of Nuclear Waste
		<i>Julia Grasley, Texas A&M University; Abdullah Azzam, Texas A&M University; Mohammad Rahmani, Texas A&M University; Yong-Rak Kim, Texas A&M University; Jongwan Eun, University of Nebraska-Lincoln; Seunghee Kim, University of Nebraska-Lincoln</i>
		Speaker: Julia Grasley (Invited Talk)
10:25 AM	10:45 AM	Deflection of a Beam under Combined Transverse and Tensile Axial Loads
		<i>Linda Teka, Department of Civil Engineering and Engineering Mechanics, Columbia University, New York City, NY, 10027; Lucas Grafals, Department of Civil Engineering and Engineering Mechanics, Columbia University, New York City, NY, 10027; Liming Li, Department of Civil Engineering and Engineering Mechanics, Columbia University, New York City, NY, 10027; Huiming Yin, Department of Civil Engineering and Engineering Mechanics, Columbia University, New York City, NY, 10027</i>
		Speaker: Linda Teka (Invited Talk)
10:45 AM	11:05 AM	Multiphysics Computational Modeling of Desiccation Behavior in Inorganic Microfiber-Reinforced Bentonite for Geological Repository of Nuclear Waste
		<i>Mohammad Rahmani, Texas A&M University; Julia Grasley, Texas A&M University; Abdullah Azzam, Texas A&M University; Yong-Rak Kim, Texas A&M University; Jongwan Eun, University of Nebraska-Lincoln; Seunghee Kim, University of Nebraska-Lincoln</i>
		Speaker: Mohammad Rahmani (Invited Talk)
11:05 AM	11:25 AM	Multiscale Modeling and Analysis to Predict Performance of Roadways
		<i>Santosh Reddy Kommidi, Texas A&M University; Kim Yong-Rak, Texas A&M University</i>
		Speaker: Santosh Reddy Kommidi (Contributed Talk)
Session: 3B, Room: MSC-2504		
Session Chair(s): Xijun (Jeff) Shi, xijun.shi@txstate.edu; Shadi Saadeh, shadi.saadeh@csulb.edu		
11:40 AM	12:00 PM	Multiphysical Finite Element Modeling of Hybrid Microwave Sintering for ISRU Lunar Construction

		<i>Shayan Gholami, Texas A&M University; Young-Jae Kim, Korea Institute of Civil Engineering and Building Technology; Yong-Rak Kim, Texas A&M University; Hyu-Soung Shin, Korea Institute of Civil Engineering and Building Technology; Janguen Lee, Korea Institute of Civil Engineering and Building Technology</i>
		Speaker: Shayan Gholami (Contributed Talk)
12:00 PM	12:20 PM	Developing landing infrastructure on extraterrestrial surfaces
		<i>FNU Anita, Chemistry Department, Texas A&M University</i>
		Speaker: FNU Anita (Contributed Talk)
12:20 PM	12:40 PM	CO2 Capture of Alkali-Activated Materials: Micromechanical Properties Coupled with Nano-Microstructure Characteristics
		<i>Shayan Gholami, Texas A&M University; Yong-Rak Kim, Texas A&M University; Dallas Little, Texas A&M University; Jong Suk Jung, Republic of Korea Land and Housing Institute; Sukmin Kwon, Republic of Korea Land and Housing Institute</i>
		Speaker: Shayan Gholami (Contributed Talk)
Session: 4A, Room: MSC-2504		
Session Chair(s): Jamilla Emi Sudo Lutf Teixeira, jamilla.teixeira@unl.edu		
2:15 PM	2:35 PM	Improvement of Hydration Simulation of Cement and Undensified & Densified Silica Fume Mixture
		<i>Yoonjung Han, Zachry Department of Civil and Environmental Engineering, Texas A&M University, College Station, TX 77843-3136, USA; Jonathan Lapeyre, Zachry Department of Civil and Environmental Engineering, Texas A&M University, College Station, TX 77843-3136, USA; Umme Zakira, Zachry Department of Civil and Environmental Engineering, Texas A&M University, College Station, TX 77843-3136, USA; Mine Ucak-Astarlioglu, Geotechnical and Structures Laboratory, U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, USA; Jedadiah Burroughs, Geotechnical and Structures Laboratory, U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, USA; Jeffrey Bullard, Department of Materials Science and Engineering, Texas A&M University, College Station, TX 77843-3003, USA, Zachry Department of Civil and Environmental Engineering, Texas A&M University, College Station, TX 77843-3136, USA</i>
		Speaker: Yoonjung Han (Contributed Talk)
2:35 PM	2:55 PM	Microstructural and Nanomechanical Characterization of Rejuvenated RAP Binders
		<i>Amal Abdelaziz, Texas A&M University; Eyad Masad, Texas A&M University at Qatar; Amy Epps Martin, Texas A&M University; Edith Arámbula Mercado, Texas A&M Transportation Institute</i>
		Speaker: Eyad Masad (Contributed Talk)
2:55 PM	3:15 PM	Biochar as a Carbon-Sequestering Strength-Improving Concrete Additive
		<i>Lori Tunstall, Colorado School of Mines; Julia Hylton, Colorado School of Mines; M. Pecha, National Renewable Energy Laboratory</i>
		Speaker: Lori Tunstall (Contributed Talk)
3:15 PM	3:35 PM	Comparative Assessment of Thermal Conductivities for Compacted Bentonite and Carbon Fiber Reinforced Bentonite with Matric Suction-Water Contents
		<i>YUAN FENG, University of Nebraska-Lincoln; Jongwan Eun, University of Nebraska-Lincoln; Seunghee Kim, University of Nebraska-Lincoln; Yong-Rak Kim, Texas A&M University</i>
		Speaker: Jongwan Eun (Contributed Talk)

Thematic Area 6. Multifunctional & Multifield

6.2 Chemo-thermo-mechanics of Energetics and Reacting Flows		
<i>Session: 4B, Room: Hotel-Reveille II</i>		
<i>Session Chair(s): Scott Jackson, sij@tamu.edu</i>		
4:10 PM	4:30 PM	Continuum Modeling of Nonlinear Specific Heat in Phase Transition of Energetic Materials
		<i>Karel Matous, University of Notre Dame; Cedric Williams, University of Notre Dame</i>
		Speaker: Karel Matous (Contributed Talk)
4:30 PM	4:50 PM	Investigations of the detonation-bow shock interaction
		<i>Ashwath Sethu Venkataraman, Texas A&M University; Elaine S Oran, Texas A&M University</i>
		Speaker: Ashwath Sethu Venkataraman (Contributed Talk)
4:50 PM	5:10 PM	The Effect of Activation Energy on the Velocity-Curvature-Acceleration Relationship for Unstable Gaseous Detonations
		<i>David Lont, Texas A&M University; Carlos Chiquete, Los Alamos National Laboratory; Mark Short, Los Alamos National Laboratory; Scott Jackson, Texas A&M University</i>
		Speaker: David Lont (Contributed Talk)
6.3 Damage and Thermo-Chemo-Mechanical Coupling in Soft Materials		
<i>Session: 4A, Room: Hotel-Reveille I</i>		
<i>Session Chair(s): Maryam Shakiba, mshakiba@vt.edu</i>		
2:15 PM	2:45 PM	Theory for coupled large deformation and hydrolytic degradation in hydrogels
		<i>Zhouzhou Pan, University of Oxford; Laurence Brassart, University of Oxford</i>
		Speaker: Laurence Brassart (Keynote Talk)
2:45 PM	3:05 PM	Probing Function and Degeneration in Elastic Biopolymers
		<i>Anna Tarakanova, University of Connecticut</i>
		Speaker: Anna Tarakanova (Invited Talk)
3:05 PM	3:25 PM	On the photo-degradation of poly(lactic acid) PLA
		<i>Keven Alkhoury, NJIT; Shawn Chester, NJIT</i>
		Speaker: Keven Alkhoury (Contributed Talk)
<i>Session: 4B, Room: Hotel-Reveille I</i>		
<i>Session Chair(s): Maryam Shakiba, mshakiba@vt.edu</i>		
4:10 PM	4:30 PM	Experimental assessment of fracture toughness and work of fracture of thermo-oxidatively aged elastomers
		<i>Aimane Najmeddine, Virginia Tech</i>
		Speaker: Aimane Najmeddine (Contributed Talk)
4:30 PM	4:50 PM	Modeling Spatial and Temporal Changes in the Chemical, Mechanical, and Geometrical Properties of Biodegradable Polymer Structures

		<i>Nithin Veerendranath Kammara, Texas A&M University; Mitchell Shockley, Texas A&M University; Anastasia Muliana, Texas A&M University</i>
		Speaker: Nithin Veerendranath Kammara (Contributed Talk)

6.4 Effective Properties of Multifunctional Composite Materials		
Session: 3A, Room: Hotel-Ross II		
Session Chair(s): Gary Seidel, gary.seidel@vt.edu; Bjoern Kiefer, Bjoern.Kiefer@imfd.tu-freiberg.de		
9:45 AM	10:15 AM	Homogenization Methods for Studying the Piezoelectric Behavior of Fuzzy Fiber Composites
		<i>George Chatzigeorgiou, CNRS, Arts et Metiers Institute of Technology, LEM3, Université de Lorraine,; Qiang Chen, Arts et Métiers Institute of Technology; Fodil Meraghni, Arts et Métiers Institute of Technology</i>
		Speaker: George Chatzigeorgiou (Keynote Talk)
10:15 AM	10:35 AM	Multiplex On-Mask Flexible MXene-Graphene Field Effect Transistor Sensing Influenza Virus and SARS-CoV-2
		<i>Chenglin Wu, Missouri University of Science and Technology; Yanxiao Li, Missouri University of Science and Technology; Zhekun Peng, Missouri University of Science and Technology; DongHyun Kim, Missouri University of Science and Technology</i>
		Speaker: Chenglin Wu (Contributed Talk)
10:35 AM	10:55 AM	Microstructural Effects on Macroscopic and Microscopic Flexoelectric Behavior of a Polymer-Metal Particle Composite
		<i>Ju Hwan Shin, Georgia Institute of Technology; Mikel Zaitzeff, South Dakota School of Mines and Technology; Lori Groven, South Dakota School of Mines and Technology; Min Zhou, Georgia Institute of Technology</i>
		Speaker: Min Zhou (Contributed Talk)
Session: 3B, Room: Hotel-Ross II		
Session Chair(s): Bjoern Kiefer, Bjoern.Kiefer@imfd.tu-freiberg.de; Gary Seidel, gary.seidel@vt.edu		
11:40 AM	12:00 PM	Design and Additive Manufacturing of Three-Dimensional Architected Robotic Metamaterials
		<i>Huachen Cui, University of California, Los Angeles; Desheng Yao, University of California, Los Angeles; Ryan Hensleigh, University of California, Los Angeles; Haotian Lu, University of California, Los Angeles; Zhenpeng Xu, University of California, Los Angeles; Zhen Wang, University of California, Los Angeles; Xiaoyu Zheng, University of California, Los Angeles</i>
		Speaker: Huachen Cui (Contributed Talk)
12:00 PM	12:20 PM	Effect of heterogeneities on the damage and electrical response of CNT-based polymer bonded energetics
		<i>Pranay Anekal, Virginia Tech; Gary Seidel, Virginia Tech</i>
		Speaker: Pranay Anekal (Contributed Talk)

6.6 Symposium on Advanced Experimental Techniques		
Session: 4B, Room: Hotel-Eagle		
Session Chair(s): Piyush R. Thakre, pthakre@dow.com		
4:10 PM	4:30 PM	Experimental Continuation of Nonlinear Structures
		<i>Jiajia Shen, University of Bristol, UK; Rainer Groh, University of Bristol; Mark Schenk, University of Bristol; Alberto Pirrera, University of Bristol</i>
		Speaker: Jiajia Shen (Contributed Talk)

4:30 PM	4:50 PM	Analysis of Thin Layers with Interphases
		<i>Kenneth Liechti, Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin; Kirill Rebrov, Oden Institute for Computational Engineering and Sciences, University of Texas at Austin; Gregory Rodin, Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin, Oden Institute for Computational Engineering and Sciences, University of Texas at Austin</i>
		Speaker: Kirill Rebrov (Contributed Talk)
4:50 PM	5:10 PM	Newly Developed Testing Method for In-situ Electrochemo-mechanical Coupling of Battery and Supercapacitor Electrodes
		<i>Dimitrios Loufakis, Texas A&M University; James Boyd, Texas A&M University; Tianyang Zhou, Texas A&M University; Tasya Nasoetion, Texas A&M University; Jodie Lutkenhaus, Texas A&M University; Dimitris Lagoudas, Texas A&M University</i>
		Speaker: Tasya Nasoetion (Contributed Talk)

6.7 Mechanically-Coupled and Surface-Enabled Functionality in 2D Materials		
Session: 3A, Room: Hotel-Century III		
Session Chair(s): SungWoo Nam, sungwoo.nam@uci.edu; Qing Tu, qing.tu@tamu.edu		
9:45 AM	10:15 AM	Water surface tension enabled high-quality 2D material processing
		<i>Sidong Lei, Georgia State University</i>
		Speaker: Sidong Lei (Keynote Talk)
10:15 AM	10:45 AM	Fatigue of Graphene and Transition Metal Dichalcogenides
		<i>Tobin Filleter, University of Toronto</i>
		Speaker: Tobin Filleter (Keynote Talk)
10:45 AM	11:05 AM	Transition from Griffith to vdW interface governed 2D crystal nanoblister
		<i>Yifan Rao, University of Texas at Austin; Eunbin Kim, University of Texas at Austin; Zhaohe Dai, Peking University, University of Texas at Austin; Nanshu Lu, University of Texas at Austin</i>
		Speaker: Yifan Rao (Contributed Talk)
Session: 3B, Room: Hotel-Century III		
Session Chair(s): SungWoo Nam, sungwoo.nam@uci.edu; Qing Tu, qing.tu@tamu.edu		
11:40 AM	12:00 PM	Robust Highly Stretchable Supercapacitors Enabled by MXene-Reduced Graphene Oxide Composite
		<i>Changyong Cao, Case Western Reserve University</i>
		Speaker: Changyong (Chase) Cao (Invited Talk)
12:00 PM	12:20 PM	Mechanics of MXenes
		<i>Chenglin Wu, Missouri University of Science and Technology; Yanxiao Li, Missouri University of Science and Technology; Congjie Wei, Missouri University of Science and Technology</i>
		Speaker: Chenglin Wu (Invited Talk)
12:20 PM	12:40 PM	Nanometer-Scale Engineering and Analysis of Transition Metal Dichalcogenides with Atomic Force Microscopy
		<i>Matthew Rosenberger, University of Notre Dame</i>
		Speaker: Matthew Rosenberger (Invited Talk)

Session: 4A, Room: Hotel-Century III		
Session Chair(s): Baoxing Xu, bx4c@virginia.edu; Qing Tu, qing.tu@tamu.edu		
2:15 PM	2:45 PM	Kinetics of Phase Nucleation and Propagation in 2D MoTe₂
		<i>Wei Gao, Texas A&M University</i>
		Speaker: Wei Gao (Keynote Talk)
2:45 PM	3:05 PM	Flexoelectric Instability in Multilayer Graphene and Its Applications in Self Assembly
		<i>Mrityunjay Kothari, Massachusetts Institute of Technology; Kyung-Suk Kim, Brown University</i>
		Speaker: Mrityunjay Kothari (Invited Talk)
3:05 PM	3:25 PM	Understanding interfacial chemo-mechanics of two-dimensional materials-based heterostructures
		<i>Dibakar Datta, New Jersey Institute of Technology (NJIT)</i>
		Speaker: Dibakar Datta (Invited Talk)
3:25 PM	3:45 PM	Entropic Interactions of 2D Materials with Cellular Membranes: Parallel versus Perpendicular Approaching Modes
		<i>Fatemeh Ahmadpoor, New Jersey Institute of Technology; Guijin Zou, Institute of High-Performance Computing, A*STAR, Singapore, 138632, Singapore; Huajian Gao, School of Mechanical and Aerospace Engineering, College of Engineering, Nanyang Technological University, 70 Nanyang Drive, Singapore, 639798, Singapore, Institute of High-Performance Computing, A*STAR, Singapore, 138632, Singapore</i>
		Speaker: Fatemeh Ahmadpoor (Invited Talk)
Session: 4B, Room: Hotel-Century III		
Session Chair(s): Baoxing Xu, bx4c@virginia.edu; Qing Tu, qing.tu@tamu.edu		
4:10 PM	4:30 PM	A framework to model zero-thickness curvature-resisting surfaces in solids
		<i>Berkin Dortdivanlioglu, UT Austin; Animesh Rastogi, UT Austin</i>
		Speaker: Animesh Rastogi (Contributed Talk)
4:30 PM	4:50 PM	Search of On-demand Thermal Conductivity of Mechanically Stretched Graphene Piles with Machine Learning
		<i>Qingchang Liu, University of Virginia; Baoxing Xu, University of Virginia</i>
		Speaker: Qingchang Liu (Invited Talk)

6.8 Mechanics of Electrochemical Systems		
Session: 3A, Room: Hotel-Reveille I		
Session Chair(s): Siva Nadimpalli, sivan@msu.edu		
9:45 AM	10:05 AM	Temperature, Size, and Strain-rate Effects in Li, Na, and K Metal Electrodes
		<i>Matt Pharr, Texas A&M University; Cole Fincher, Massachusetts Institute of Technology</i>
		Speaker: Matt Pharr (Contributed Talk)
10:05 AM	10:25 AM	A Fracture Mechanics Approach to Polymer Binder/Active Material Interface Failure Characterization for High Performance Electrodes
		<i>Akshay Pakhare, Michigan State University; Siva Nadimpalli, Michigan State University</i>
		Speaker: Akshay Pakhare (Contributed Talk)

10:25 AM	10:45 AM	Asynchronous-to-Synchronous Transition of Li Reactions in Solid-Solution Cathodes
		<i>Nikhil Sharma, Purdue University; Luize Vasconcelos, University of Texas at Austin; Kejie Zhao, Purdue University</i>
		Speaker: Nikhil Sharma (Contributed Talk)
10:45 AM	11:05 AM	Fracture Behavior of Metallic Sodium and Implications for Rechargeable Batteries
		<i>Matt Pharr, Texas A&M university; Jungho Shin, Texas A&M University</i>
		Speaker: Jungho Shin (Contributed Talk)
11:05 AM	11:25 AM	Role of Anisotropy on the Chemo-Mechanical Performance of Polycrystalline NMC Secondary Particle Embedded in a Sulfide-based Solid Electrolyte
		<i>Avtar Singh, Massachusetts Institute of Technology; Wei Li, MIT; Trevor Martin, National Renewable Energy Laboratory; Donal Finegan, National Renewable Energy Laboratory; Juner Zhu, Massachusetts Institute of Technology</i>
		Speaker: Juner Zhu (Contributed Talk)

6.10 Modeling of Complex Fluids and Applications

Session: 4A, Room: Hotel-Leadership

Session Chair(s): Shiva Rudraraju, shiva.rudraraju@wisc.edu

2:15 PM	2:45 PM	Residual-based Turbulence Model for Incompressible Flows with Density Stratification
		<i>Arif Masud, University of Illinois at Urbana-Champaign; Lixing Zhu, Institute of Mechanics, Chinese Academy of Sciences, Beijing</i>
		Speaker: Arif Masud (Keynote Talk)
2:45 PM	3:05 PM	Phase Field Modeling of Chemically Reactive Multi-Component/Multi-Phase Systems and its Application to Reactive Filtration of Steel Melt
		<i>Andreas Seupel, TU Bergakademie Freiberg; Stephan Roth, TU Bergakademie Freiberg; Bjoern Kiefer, TU Bergakademie Freiberg</i>
		Speaker: Andreas Seupel (Contributed Talk)
3:05 PM	3:25 PM	Numerical Schemes for a New Thermodynamically Consistent Model for Two-Phase Incompressible Flows with Different Densities
		<i>Giordano Tierra, Department of Mathematics, University of North Texas; Mireille El Haddad, Universite Laval, Canada</i>
		Speaker: Giordano Tierra (Contributed Talk)

6.12 Multiscale Extreme Behavior of Materials: Structure, Mechanisms, and Kinetic Process

Session: 3A, Room: Hotel-Traditions

Session Chair(s): Ramathasan Thevamaran, thevamaran@wisc.edu; Thomas Voisin, voisin2@llnl.gov

9:45 AM	10:05 AM	Dynamic Mechanical Performances of Polymeric Nanofiber Mat under Supersonic Impact
		<i>Jizhe Cai, University of Wisconsin-Madison; Mohammad Naraghi, Texas A&M University; Ramathasan Thevamaran, University of Wisconsin-Madison</i>
		Speaker: Jizhe Cai (Contributed Talk)
10:05 AM	10:25 AM	High Strain Rate Mechanical Testing of Nanoporous Gold Using a Shock-Tube Bulge Test
		<i>Jasdeep Singh, Department of Materials Science and Engineering, Texas A&M University; Hooman Rahmani, Department of Materials Science and Engineering, Texas A&M University; Umair Bin Asim, Department of Materials Science and Engineering, Texas A&M University; Sean Cooper, J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University; Eric Petersen, J. Mike</i>

		<i>Walker '66 Department of Mechanical Engineering, Texas A&M University; Ankit Srivastava, Department of Materials Science and Engineering, Texas A&M University; Michael Demkowicz, Department of Materials Science and Engineering, Texas A&M University</i>
		Speaker: Jasdeep Singh (Contributed Talk)
10:25 AM	10:45 AM	On the accuracy of a line free 3D monopole method in discrete dislocation plasticity
		<i>Aitor Cruzado, Texas A&M; Pilar Ariza, University of Sevilla; Alan Needleman, Texas A&M; Michael Ortiz, Caltech; Amine Benzerga, Texas A&M</i>
		Speaker: Aitor Cruzado (Invited Talk)
10:45 AM	11:05 AM	Extreme Heat Shielding Coating on Carbon Fiber Composites
		<i>Tanaya Mandal, Texas A&M University; Sevetcan Sarikaya, Texas A&M University; Danixa Rodriguez-Melendez, Texas A&M University; Jaime Grunlan, Texas A&M University; Mohammad Naraghi, Texas A&M University, Department of Aerospace Engineering</i>
		Speaker: Tanaya Mandal (Contributed Talk)
Session: 3B, Room: Hotel-Traditions		
Session Chair(s): Ramathan Thevamaran, thevamaran@wisc.edu; Thomas Voisin, voisin2@llnl.gov		
11:40 AM	12:00 PM	Temperature perturbations causing temporally stable current density localization in VO2
		<i>Adelaide Bradicich, Texas A&M University; Patrick Shamberger, Texas A&M University</i>
		Speaker: Adelaide Bradicich (Contributed Talk)
12:00 PM	12:20 PM	Defect engineering in VO2 thin films via He+ irradiation
		<i>Rebeca Gurrola, Texas A&M University; Adelaide Bradicich, Texas A&M University; Nicole Person, Texas A&M University; Tzu Ming Lu, Center for Integrated Nanotechnologies (CINT); Patrick Shamberger, Texas A&M University</i>
		Speaker: Rebeca Gurrola (Contributed Talk)

Thematic Area 7. Robotics & Controls

7.4 Soft Robotics: Matter, Structure, and Intelligence		
Session: 3A, Room: MSC-2401		
Session Chair(s): Jie Yin, jyin8@ncsu.edu		
9:45 AM	10:05 AM	Wireless Soft Millirobots for Climbing Three-dimensional Tissue Surfaces
		<i>Xiaoguang Dong, Vanderbilt University, Vanderbilt Institute for Surgery and Engineering</i>
		Speaker: Xiaoguang Dong (Contributed Talk)
10:05 AM	10:25 AM	Design induced asymmetry in contact forces of a hydrogel crawler
		<i>Bibekananda Datta, Graduate Student, Johns Hopkins University; Aishwarya Pantula, Johns Hopkins University; David Gracias, Professor, Johns Hopkins University; Thao Nguyen, Professor, Johns Hopkins University</i>
		Speaker: Bibekananda Datta (Contributed Talk)
10:25 AM	10:45 AM	Fast Thermal Actuators for Soft Robotics
		<i>Shuang Wu, North Carolina State University; G Baker, North Carolina State University; Jie Yin, North Carolina State University; Yong Zhu, North Carolina State University</i>
		Speaker: Yong Zhu (Invited Talk)
10:45 AM	11:05 AM	Paleomimicry: Robotics Informs How the First Mobile Echinoderms Moved
		<i>Richard Desatnik, Carnegie Mellon University</i>
		Speaker: Richard Desatnik (Contributed Talk)
11:05 AM	11:25 AM	Structure-Mechanics-Performance of Fish-fins as inspiration for robotic materials
		<i>Saurabh Das, University of Colorado, Boulder; Florent Hannard, Universite Catholique de Louvain, Belgium; Francois Barthelat, University of Colorado, Boulder</i>
		Speaker: Saurabh Das (Contributed Talk)
Session: 3B, Room: MSC-2401		
Session Chair(s): Jie Yin, jyin8@ncsu.edu		
11:40 AM	12:00 PM	Wearable Robots with Integrated Fluidic Control and Energy Harvesting
		<i>Daniel Preston, Rice University</i>
		Speaker: Daniel Preston (Contributed Talk)
12:00 PM	12:20 PM	Electrospun Liquid Crystal Elastomer Microfiber Actuator
		<i>Qiguang He, University of Pennsylvania, University of California, San Diego; Shengqiang Cai, University of California, San Diego</i>
		Speaker: Qiguang He (Contributed Talk)
12:20 PM	12:40 PM	Using Autonomy to Enable Telepresence Robot Control
		<i>Rob Ambrose, Texas A&M</i>
		Speaker: Rob Ambrose (Contributed Talk)
Session: 4A, Room: MSC-2401		
Session Chair(s): Jie Yin, jyin8@ncsu.edu		

2:15 PM	2:35 PM	Snapping for high-speed and high-efficient soft swimming robots
		<i>Jie Yin, North Carolina State University; Yinding Chi, North Carolina State University; Yaoye Hong, North Carolina State University; Yao Zhao, North Carolina State University; Yanbin Li, North Carolina State University</i>
		Speaker: Jie Yin (Contributed Talk)
2:35 PM	2:55 PM	Phase Diagram and Mechanics of Snap-Folding of Ring Origami by Twisting
		<i>Xiaohao Sun, Georgia Institute of Technology; Shuai Wu, Stanford University; Jize Dai, The Ohio State University; Sophie Leanza, The Ohio State University; Liang Yue, Georgia Institute of Technology; Luxia Yu, Georgia Institute of Technology; Yi Jin, The Ohio State University; H. Qi, Georgia Institute of Technology; Ruike Zhao, Stanford University</i>
		Speaker: Xiaohao Sun (Contributed Talk)
2:55 PM	3:15 PM	Harnessing Vacuum-Driven Instability of Thin-Walled Cylinders for Soft Robotics
		<i>Yi Yang, Harvard University; David Melancon, Princeton University; Ahmad Zareei, Meta; Antonio Forte, King's College London; Katia Bertoldi, Harvard University</i>
		Speaker: Yi Yang (Contributed Talk)
3:15 PM	3:35 PM	A fast-response soft gripper inspired by the mechanics of the hummingbird beak
		<i>Jijia Shen, University of Bristol, UK; Martin Garrad, University of Bristol; Alberto Pirrera, University of Bristol; Rainer Groh, University of Bristol</i>
		Speaker: Jijia Shen (Contributed Talk)
3:35 PM	3:55 PM	Spinning-enabled Wireless Amphibious Origami Millirobot
		<i>Renee Zhao, Stanford University</i>
		Speaker: Renee Zhao (Invited Talk)
Session: 4B, Room: MSC-2401		
Session Chair(s): Jie Yin, jyin8@ncsu.edu		
4:10 PM	4:30 PM	Liquid crystal elastomer-based soft robotics
		<i>Shengqiang Cai, University of California, San Diego</i>
		Speaker: Shengqiang Cai (Invited Talk)
4:30 PM	4:50 PM	Multifunctional fluidic networks
		<i>Anne Meeussen, Harvard University; Katia Bertoldi, Harvard University; Adel Djellouli, Harvard University; Louis-Justin Tallot, Mines ParisTech; Ahmad Zareei, Harvard University</i>
		Speaker: Anne Meeussen (Contributed Talk)

Thematic Area 8. Soft & Flexible

8.1 3D Printing of Polymers and Composites		
Session: 3A, Room: Hotel-Oak		
Session Chair(s): Jessica Wang, yuewang@ucmerced.edu		
9:45 AM	10:05 AM	Direct Ink Write Printing of Composites for Thermal Energy Management
		<i>Emily Pentzer, Texas A&M University, Materials Science and Engineering; Ciera Cipriani, Texas A&M University; Peiran Wei, Texas A&M University</i>
		Speaker: Emily Pentzer (Invited Talk)
10:05 AM	10:25 AM	Programmable Polymer Filaments for Shape Reconfigurable Kerf Structures
		<i>Aryabhat Darnal, Texas A&M University; Himani Deshpande, Texas A&M University; Jeeun Kim, Texas A&M University; Anastasia Muliana, Texas A&M University</i>
		Speaker: Aryabhat Darnal (Contributed Talk)
10:25 AM	10:45 AM	Frontal Curing-assisted 3D Printing of Continuous Carbon Fiber/Epoxy Thermoset Composites
		<i>Zimeng Zhang, Baker Huger Inc.; Ruochen Liu, Texas A&M University; Wei Li, Texas A&M; SHIREN WANG, Texas A&M University</i>
		Speaker: Wei Li (Contributed Talk)
10:45 AM	11:05 AM	Autonomic Self-healing of 3D Printed Polymer Composites
		<i>Bryan Beckingham, Auburn University, Dept. of Chemical Engineering; Vinita Shinde, Auburn University</i>
		Speaker: Bryan Beckingham (Invited Talk)
8.3 Extreme Soft Materials by Polymer-Network Design		
Session: 3B, Room: Hotel-Century II		
Session Chair(s): Shaoting Lin, linshaot@msu.edu		
11:40 AM	12:00 PM	Extremely tough bioadhesives by interface-network design
		<i>Jianyu Li, McGill University</i>
		Speaker: Jianyu Li (Invited Talk)
12:00 PM	12:20 PM	Aerodynamic fiber deposition for nanofiber-reinforced soft materials of complex alignment
		<i>Qihan Liu, University of Pittsburgh</i>
		Speaker: Qihan Liu (Invited Talk)
12:20 PM	12:40 PM	Fast, strong, and reversible hydrogel adhesives with dynamic covalent bonds as wound dressing
		<i>Shu Yang, University of Pennsylvania</i>
		Speaker: Shu Yang (Invited Talk)
Session: 4A, Room: Hotel-Century II		
Session Chair(s): Zhao Qin, zqin02@syr.edu; Aniruddh Vashisth, vashisth@uw.edu		
2:15 PM	2:45 PM	Multi-paradigm transformer modeling of hierarchical protein materials under extreme conditions
		<i>Markus Buehler, MIT</i>

		Speaker: Markus Buehler (Keynote Talk)
2:45 PM	3:05 PM	Designing bio-inspired structural materials with Gaussian Process Regression based Bayesian optimization
		<i>Seunghwa Ryu, KAIST (Korea Advanced Institute of Science and Technology)</i>
		Speaker: Seunghwa Ryu (Invited Talk)
3:05 PM	3:25 PM	Squid-inspired materials with controlled network topology and dynamic properties
		<i>Abdon Pena-Francesch, University of Michigan</i>
		Speaker: Abdon Pena-Francesch (Invited Talk)
3:25 PM	3:45 PM	Main-chain engineering of hydrophilic non-conjugated building blocks on polymer photocatalysts for enhanced visible-light-driven hydrogen evolution
		<i>Chi-Hua Yu, Department of Engineering Science, National Cheng Kung University; Chin-Hsuan Shih, Department of Engineering Science, National Cheng Kung University; Chih-Li Chang, Department of Chemical Engineering, National Tsing Hua University; Ho-Hsiu Chou, Department of Chemical Engineering, National Tsing Hua University; Chin-Wen Chen, Department of Molecular Science and Engineering, National Taipei University of Technology</i>
		Speaker: Chi-Hua Yu (Invited Talk)
Session: 4B, Room: Hotel-Century II		
Session Chair(s): Jie Zheng, zhengj@uakron.edu; Zhao Qin, zqin02@syr.edu		
4:10 PM	4:30 PM	Sticky Rouse Time Features the Self-Healing of Supramolecular Polymer Networks
		<i>Ying Li, University of Connecticut; Zhiqiang Shen, University of Connecticut; Qiming Wang, University of Southern California; Martin Kroger, ETH Zurich</i>
		Speaker: Ying Li (Invited Talk)
4:30 PM	4:50 PM	Experiment and Modeling of Mycelium Based Bio-composites for High Mechanical Strength and Lightweight
		<i>Zhao Qin, Syracuse University; Libin Yang, Syracuse University</i>
		Speaker: Zhao Qin (Contributed Talk)
4:50 PM	5:10 PM	Revisiting the Structure-Function Paradigm through Integrated Physics-Based Modeling and Deep Learning
		<i>Anna Tarakanova, University of Connecticut</i>
		Speaker: Anna Tarakanova (Invited Talk)

8.4 Functional Soft Composites - Design, Mechanics, and Manufacturing		
Session: 4A, Room: Hotel-Traditions		
Session Chair(s): Renee Zhao, rrzhao@stanford.edu		
2:15 PM	2:45 PM	Tough Nanocomposites Made of 2D Materials with Atomically Thin Polymer Layers
		<i>Horacio Espinosa, Northwestern University; Xu Zhang, Northwestern University; Hoang Nguyen, Northwestern University</i>
		Speaker: Horacio Espinosa (Keynote Talk)
2:45 PM	3:15 PM	Origami-based Metamaterials: Mechanics and Devices
		<i>Hanqing Jiang, Westlake University</i>
		Speaker: Hanqing Jiang (Keynote Talk)

3:15 PM	3:35 PM	Capillary-driven soft robotic textures
		<i>Sam Tawfick, University of Illinois at Urbana-Champaign</i>
		Speaker: Sam Tawfick (Invited Talk)
3:35 PM	3:55 PM	Mechanical Stretch-Induced Reorganization of Silver Flakes in a Soft Matrix
		<i>Qingchang Liu, University of Virginia; Baoxing Xu, University of Virginia</i>
		Speaker: Qingchang Liu (Contributed Talk)
Session: 4B, Room: Hotel-Traditions		
Session Chair(s): Xiaohao Sun, xiaohao.sun@gatech.edu		
4:10 PM	4:30 PM	Lightweight Soft Conductive Composites Embedded with Liquid Metal Fiber Networks
		<i>Pu Zhang, SUNY Binghamton; Jiexian Ma, SUNY Binghamton; Zihan Liu, SUNY Binghamton</i>
		Speaker: Pu Zhang (Contributed Talk)
4:30 PM	4:50 PM	Soft Magnetic Thin Film Actuator with Bistable Electropermanent Magnet
		<i>Nolen Keeys, Carnegie Mellon University; Dinesh Patel, Carnegie Mellon University; Carmel Majidi, Carnegie Mellon University; Philip LeDuc, Carnegie Mellon University</i>
		Speaker: Nolen Keeys (Contributed Talk)
4:50 PM	5:10 PM	The Buckling Waltz: Mechanical instabilities in rotating beams
		<i>Eduardo Gutierrez-Prieto, EPFL; Pedro Reis, EPFL</i>
		Speaker: Eduardo Gutierrez-Prieto (Contributed Talk)

8.5 Functional Soft Materials in Additive Manufacturing: from Design to Application		
Session: 3A, Room: Hotel-Leadership		
Session Chair(s): Peiran Wei, peiran@tamu.edu		
9:45 AM	10:05 AM	3D Printing of Conductive Bicontinuous Phase for Wearable EMI Shielding
		<i>Yifei Wang, Department of Materials Science&Engineering, Texas A&M University; Ciera Cipriani, Department of Materials Science&Engineering, Texas A&M University; Huaixuan Cao, Department of Chemical Engineering, Texas A&M University; Kai-Wei Liu, Texas A&M Transportation Institute; Peiran Wei, Soft Matter Facility, Texas A&M University; Emily Pentzer, Department of Materials Science&Engineering, Department of Chemistry, Texas A&M University</i>
		Speaker: Yifei Wang (Contributed Talk)
10:05 AM	10:25 AM	Optimal Design of Soft Responsive Structures and Actuators
		<i>Andrew Akerson, Caltech; Kaushik Bhattacharya, Caltech</i>
		Speaker: Andrew Akerson (Contributed Talk)
10:25 AM	10:45 AM	Direct Ink Writing and Digital Light Processing 3D-Printing of ABA Triblock Polycarbonates
		<i>Krista Schoonover, Texas A&M University, Chemistry; Ciera Cipriani, Texas A&M University, Materials Science and Engineering; Chia-Min Hsieh, Texas A&M University, Chemistry; Fnu Sengoden, Texas A&M University, Chemistry; Gulzar Bhat, University of Kashmir, Centre for Interdisciplinary Research and Innovations; Peiran Wei, Texas A&M University, Soft Matter Facility; Donald Darensbourg, Texas A&M University, Chemistry; Emily Pentzer, Texas A&M University, Chemistry</i>
		Speaker: Krista Schoonover (Contributed Talk)

8.6 Mechanics and Physics of Soft Materials		
Session: 3A, Room: Hotel-Hullabaloo		
Session Chair(s): Yuhang Hu, yuhang.hu@me.gatech.edu; Xuanhe Zhao, zhaox@mit.edu		
9:45 AM	10:05 AM	Modeling and Experiments of the Thermo-Mechanically Coupled behavior of VHB
		<i>Keven Alkhoury, New Jersey Institute of Technology; Shawn Chester, New Jersey Institute of Technology; Siva Nadimpalli, Michigan State University; Howon Lee, Seoul National University; Yueping Wang, Rutgers University; Nikola Bosnjak, Cornell University</i>
		Speaker: Keven Alkhoury (Contributed Talk)
10:05 AM	10:25 AM	Some Rational Designs of Deployable Bistable Surfaces
		<i>Tian Chen, University of Houston</i>
		Speaker: Tian Chen (Contributed Talk)
10:25 AM	10:45 AM	The Poker-chip Experiments of Gent and Lindley (1959) Explained
		<i>Aditya Kumar, Georgia Institute of Technology; Oscar Lopez-Pamies, University of Illinois at Urbana-Champaign</i>
		Speaker: Aditya Kumar (Contributed Talk)
10:45 AM	11:05 AM	The Simulation of Hypervelocity Impacts to High-Density Polyethylene
		<i>Jacob Rogers, Texas A&M University, Hypervelocity Impact Laboratory; Paul Mead, Texas A&M University; Khari Harrison, Texas A&M University; Aniket Mote, Texas A&M University; Gavin Lukasik, Texas A&M University; Waruna Kulatilaka, Texas A&M University; Justin Wilkerson, Texas A&M University; Thomas Lacy, Jr., Texas A&M University</i>
		Speaker: Jacob Rogers (Contributed Talk)
11:05 AM	11:25 AM	Why Does a Confined Elastomer Layer Form Numerous Cavities?
		<i>Sida Hao, University of Texas at Austin; Zhigang Suo, Harvard University; Rui Huang, University of Texas at Austin</i>
		Speaker: Sida Hao (Contributed Talk)
Session: 3B, Room: Hotel-Hullabaloo		
Session Chair(s): Yuhang Hu, yuhang.hu@me.gatech.edu; Xuanhe Zhao, zhaox@mit.edu		
11:40 AM	12:00 PM	Shell buckling of imperfect shells as an extreme-value statistics problem
		<i>Fani Derveni, EPFL; Dong Yan, EPFL; William Gueissaz, EPFL; Florian Choquart, EPFL; Pedro Reis, EPFL</i>
		Speaker: Fani Derveni (Contributed Talk)
12:00 PM	12:20 PM	Laddering Propagation in Weft Knit Fabrics
		<i>Helen Read, Harvard University; Kausalya Mahadevan, Harvard University; Katia Bertoldi, Harvard University</i>
		Speaker: Helen Read (Contributed Talk)
12:20 PM	12:40 PM	Photomechanics and thermomechanics of nematic liquid crystal elastomers
		<i>Ruobing Bai, Northeastern University</i>
		Speaker: Ruobing Bai (Contributed Talk)
Session: 4A, Room: Hotel-Hullabaloo		
Session Chair(s): Stephan Rudykh, rudykh@wisc.edu; Oscar Lopez-Pamies, pamies@illinois.edu		
2:15 PM	2:35 PM	Elastomers filled with liquid inclusions: Theory, numerical implementation, and some results

		<i>Kamalendu Ghosh, University of Illinois Urbana-Champaign; Oscar Lopez-Pamies, University of Illinois Urbana-Champaign</i>
		Speaker: Kamalendu Ghosh (Contributed Talk)
2:35 PM	2:55 PM	Phase separation of hydrogels
		<i>Yu Zhou, University of California, Los Angeles; Lihua Jin, University of California, Los Angeles</i>
		Speaker: Lihua Jin (Contributed Talk)
2:55 PM	3:15 PM	Energy-based modeling of the mechanics of biological puncture
		<i>Bingyang Zhang, University of Illinois Urbana-Champaign; Philip Anderson, University of Illinois Urbana-Champaign</i>
		Speaker: Bingyang Zhang (Contributed Talk)
3:15 PM	3:35 PM	A Statistical Mechanics Framework for Polymer Chain Scission, Based on the Concepts of Distorted Bond Potential and Asymptotic Matching
		<i>Jason Mulderrig, Sibley School of Mechanical and Aerospace Engineering, Cornell University; Brandon Talamini, Lawrence Livermore National Laboratory; Nikolaos Bouklas, Sibley School of Mechanical and Aerospace Engineering, Cornell University</i>
		Speaker: Jason Mulderrig (Contributed Talk)
3:35 PM	3:55 PM	Microscopic Actuation for Macroscopic Aggregation
		<i>Mustafa Abdelrahman, Department of Materials Science and Engineering, Texas A&M University; Manivannan Sivaperuman Kalairaj, Department of Biomedical Engineering, Texas A&M University; Suitu Wang, Department of Materials Science and Engineering, Texas A&M University; Mahjabeen Javed, Department of Biomedical Engineering, Texas A&M University; Taylor Ware, Texas A&M University</i>
		Speaker: Mustafa Abdelrahman (Contributed Talk)
Session: 4B, Room: Hotel-Hullabaloo		
Session Chair(s): Stephan Rudykh, rudykh@wisc.edu; Oscar Lopez-Pamies, pamies@illinois.edu		
4:10 PM	4:30 PM	Chemomechanics of hydrogels
		<i>Yuhang Hu, Georgia Institute of Technology; Haohui Zhang, Georgia Institute of Technology; mohammad dehghanydahaj, Georgia Institute of Technology</i>
		Speaker: Yuhang Hu (Contributed Talk)
4:30 PM	4:50 PM	Contact Mechanics of Hydrogels
		<i>Yuhang Hu, Georgia Institute of Technology; Dongjing He, Georgia Institute of Technology; Yang Lai, Georgia Institute of Technology</i>
		Speaker: Yuhang Hu (Contributed Talk)
4:50 PM	5:10 PM	Modeling the Effect of Residual Stress in Hyperelastic Materials: the example of Spherical Inflation
		<i>Atacan Yucesoy, Michigan State University; Thomas Pence, Michigan State University</i>
		Speaker: Atacan Yucesoy (Contributed Talk)

8.9 Mechanics, Materials, Manufacture and Device Innovations of Soft Electronics		
Session: 3A, Room: Hotel-Century IV		
Session Chair(s): Cunjiang Yu, cmy5358@psu.edu; Limei Tian, ltian@tamu.edu		
9:45 AM	10:15 AM	Bioadhesive Ultrasound for Long-term Continuous Imaging of Diverse Organs
		<i>Xuanhe Zhao, MIT</i>
		Speaker: Xuanhe Zhao (Keynote Talk)
10:15 AM	10:35 AM	Laser-Scribed Conductive, Photoactive Transition Metal Oxide on Soft Elastomers for Janus Skin-Interfaced Electronics and Light-Driven Soft Actuators
		<i>Zheng Yan, University of Missouri-Columbia</i>
		Speaker: Zheng Yan (Invited Talk)
10:35 AM	10:55 AM	Biphasic Soft Conductors for Printed Stretchable Electron-ics
		<i>Carmel Majidi, Carnegie Mellon University</i>
		Speaker: Carmel Majidi (Invited Talk)
10:55 AM	11:15 AM	Rubbery Electronics: Active electronics and circuits entirely based on rubbers
		<i>Cunjiang Yu, Pennsylvania State University</i>
		Speaker: Cunjiang Yu (Contributed Talk)
Session: 3B, Room: Hotel-Century IV		
Session Chair(s): Limei Tian, ltian@tamu.edu; Cunjiang Yu, cmy5358@psu.edu		
11:40 AM	12:00 PM	Electromechanical understandings of hybrid response pressure sensors
		<i>Zhengjie Li, University of Texas at Austin</i>
		Speaker: Zhengjie Li (Contributed Talk)
12:00 PM	12:20 PM	Moldable, Transferrable, High-Performance Conductive Nanocomposites
		<i>Myeong Namkoong, Biomedical Engineering</i>
		Speaker: Myeong Namkoong (Contributed Talk)
Session: 4A, Room: Hotel-Century IV		
Session Chair(s): Cunjiang Yu, cmy5358@psu.edu; Limei Tian, ltian@tamu.edu		
2:15 PM	2:35 PM	Print-in-place and Recyclable Electronics from Nanomaterials
		<i>Aaron Franklin, Duke University</i>
		Speaker: Aaron Franklin (Invited Talk)
2:35 PM	2:55 PM	Mechanics of Bio-Conformable Devices
		<i>Nanshu Lu, The University of Texas at Austin</i>
		Speaker: Nanshu Lu (Invited Talk)
2:55 PM	3:15 PM	Nanowire Percolation Network for Recyclable Soft Electronics
		<i>Yuxuan Liu, North Carolina State University; Yong Zhu, North Carolina State University</i>
		Speaker: Yong Zhu (Invited Talk)
3:15 PM	3:35 PM	Drawn-on-Skin Bioelectronics for Motion Artifact-Less Physiological Sensing

		<i>Faheem Ershad, Department of Biomedical Engineering, Pennsylvania State University; Cunjiang Yu, Department of Engineering Science, Pennsylvania State University, Department of Biomedical Engineering, Pennsylvania State University</i>
		Speaker: Faheem Ershad (Contributed Talk)
3:35 PM	3:55 PM	An Unobstructive Hand Band with a Stretchable Magnetic Backplane for High-power Wireless Charging
		<i>Sangjun Kim, The University of Texas at Austin; Jonathan Wells, The University of Texas at Austin; Nathan Lazarus, U.S. Army Research Laboratory; Nanshu Lu, The University of Texas at Austin</i>
		Speaker: Sangjun Kim (Contributed Talk)
Session: 4B, Room: Hotel-Century IV		
Session Chair(s): Limei Tian, ltian@tamu.edu; Cunjiang Yu, cmy5358@psu.edu		
4:10 PM	4:30 PM	Stretchable, Self-healable, Recyclable, and Reconfigurable Electronics
		<i>Jianliang Xiao, University of Colorado Boulder</i>
		Speaker: Jianliang Xiao (Invited Talk)
4:30 PM	4:50 PM	Crab-eye-inspired Cameras with an amphibious and panoramic imaging characteristics
		<i>Young Min Song, GIST</i>
		Speaker: Young Min Song (Contributed Talk)

Thematic Area 9. Solids & Structures

9.1 Vibrations, Adaptive Structures and Testing		
Session: 4A, Room: Hotel-Corps II		
Session Chair(s): Sriram Malladi, smalladi@mtu.edu ; Mohammad Albakri, mohammad.albakri@qatar.tamu.edu		
2:15 PM	2:45 PM	Using Adaptive Thermal Metamaterials for Passive Thermal Control of Satellites Austin A. Phoenix
		<i>Austin Phoenix, Booz Allen Hamilton</i>
		Speaker: Austin Phoenix (Keynote Talk)
2:45 PM	3:15 PM	Data-driven modeling for structured dynamics: A systems-theoretic approach
		<i>Serkan Gugercin, Virginia Tech</i>
		Speaker: Serkan Gugercin (Keynote Talk)
3:15 PM	3:35 PM	Multi-mode Model Predictive Control of a Thin Structure Using Piezoelectric Actuators
		<i>Ipar Ferhat, Middle East Technical University</i>
		Speaker: Ipar Ferhat (Invited Talk)
3:35 PM	3:55 PM	A Structural Dynamics Perspective to Bio-inspired Underwater Propulsion
		<i>Patrick Musgrave, University of Florida</i>
		Speaker: Patrick Musgrave (Invited Talk)
9.2 Classical and Nonclassical Continuum Theories and their Application		
Session: 4A, Room: Hotel-Ross II		
Session Chair(s): Arash Yavari, arash.yavari@ce.gatech.edu ; Sri Sai Charan Mathi, s600m875@ku.edu		
2:15 PM	2:45 PM	Ductile Damage in Metals through Local Translation and Scaling Symmetries in Space-time
		<i>Debasish Roy, Centre of Excellence in Advanced Mechanics of Materials, Indian Institute of Science, Bangalore 560012, India, Computational Mechanics Lab, Department of Civil Engineering, Indian Institute of Science, Bangalore 560012, India</i>
		Speaker: Debasish Roy (Keynote Talk)
2:45 PM	3:15 PM	A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites
		<i>Marco Salviato, University of Washington; Antonio Deleo, University of Washington; Sean Phenisee, University of Washington; Daniele Pelessone, ES3 Inc; Mark Flores, Air Force Research Laboratory (AFRL)</i>
		Speaker: Marco Salviato (Keynote Talk)
3:15 PM	3:35 PM	Deviatoric Stress Waves In Thermoviscoelastic Solids due to Rheology
		<i>Karan Surana, University of Kansas; Elie Abboud, University of Kansas</i>
		Speaker: Elie Abboud (Contributed Talk)
3:35 PM	3:55 PM	Analytical and Numerical Modeling of Materials with Flexible Nanoplatelets
		<i>Sofia Mogilevskaya, University of Minnesota; Anna Zemlyanova, Kansas State University; Zhilin Han, Donghua University; Dominik Schillinger, TU Darmstadt</i>
		Speaker: Sofia Mogilevskaya (Contributed Talk)

Session: 4B, Room: Hotel-Ross II		
Session Chair(s): Arash Yavari, arash.yavari@ce.gatech.edu; Sri Sai Charan Mathi, s600m875@ku.edu		
4:10 PM	4:30 PM	Ordered Rate Nonlinear Constitutive Theories for Classical Thermoviscoelastic Polymeric Fluids
		<i>Karan Surana, University of Kansas; Thomas Ezell, University of Kansas</i>
		Speaker: Thomas Ezell (Contributed Talk)
4:30 PM	4:50 PM	An Elasto-Plastic Model For Architected Metallic 3D Lattice Structures
		<i>Arun R Srinivasa, J. Mike Walker '66 Department of Mechanical Engineering; Bensingh Dhas Pancras, J. Mike Walker '66 Department of Mechanical Engineering; Dominic Jarecki, J. Mike Walker '66 Department of Mechanical Engineering; J N Reddy, J. Mike Walker '66 Department of Mechanical Engineering</i>
		Speaker: Dominic Jarecki (Contributed Talk)

9.5 Controlling Mechanical Waves with Metamaterials		
Session: 3A, Room: Hotel-Ross I		
Session Chair(s): Kathryn Matlack, kmatlack@illinois.edu		
9:45 AM	10:15 AM	Passive wave and vibration control using geometry
		<i>A. Srikantha Phani, Department of Mechanical Engineering, University of British Columbia</i>
		Speaker: A. Srikantha Phani (Keynote Talk)
10:15 AM	10:35 AM	Exploiting non-Hermitian degeneracies in PT-symmetric phononic materials: A comprehensive treatment of complex spatiotemporal modulations
		<i>Mohammadreza Moghaddaszadeh, University at Buffalo (SUNY); Mohammad Attarzadeh, University at Buffalo (SUNY); Amjad Aref, University at Buffalo (SUNY); Mostafa Nouh, University at Buffalo (SUNY)</i>
		Speaker: Mohammadreza Moghaddaszadeh (Contributed Talk)
10:35 AM	10:55 AM	Effective wave motion in periodic origami-inspired structures
		<i>Othman Oudghiri-Idrissi, University of Michigan Ann Arbor; Bojan B. Guzina, University of Minnesota Twin Cities</i>
		Speaker: Othman Oudghiri-Idrissi (Contributed Talk)
10:55 AM	11:15 AM	Acoustic Metamaterials at the Microscale
		<i>Rachel Sun, Massachusetts Institute of Technology; Katherine Guo, Massachusetts Institute of Technology; Carlos Portela, Massachusetts Institute of Technology</i>
		Speaker: Rachel Sun (Contributed Talk)
Session: 3B, Room: Hotel-Ross I		
Session Chair(s): Kathryn Matlack, kmatlack@illinois.edu		
11:40 AM	12:00 PM	Exceptional Points in Periodic Metastructures with PT-symmetric Defects
		<i>Yanghao Fang, University of Wisconsin-Madison; Tsampikos Kottos, Wesleyan University; Ramathan Thevamaran, University of Wisconsin-Madison</i>
		Speaker: Yanghao Fang (Contributed Talk)
12:00 PM	12:20 PM	Optimal Design of Elastic Cloaks
		<i>Fabio Sozio, Solid Mechanics Laboratory, École Polytechnique, France</i>

		Speaker: Fabio Sozio (Contributed Talk)
12:20 PM	12:40 PM	Dynamic Response of a 1D Granular Chain Composed of Lattice Structures Immersed in Smart Fluids
		<i>Prajwal Bharadwaj, Ph.D. Candidate, Department of Aerospace Engineering, Worcester Polytechnic Institute; Nikhil Karanjgaokar, Assistant Professor, Department of Aerospace Engineering, Worcester Polytechnic Institute</i>
		Speaker: Prajwal Bharadwaj (Contributed Talk)
Session: 4A, Room: Hotel-Ross I		
Session Chair(s): Kathryn Matlack, kmatlack@illinois.edu		
2:15 PM	2:35 PM	Wave propagation in continuum phononic materials with nonlinearity from asymmetric stiffness
		<i>Elizabeth Smith, University of Illinois, Urbana-Champaign; Kathryn Matlack, University of Illinois, Urbana-Champaign</i>
		Speaker: Elizabeth Smith (Contributed Talk)
2:35 PM	2:55 PM	Enhanced actuation near exceptional points by non-Hermitian metamaterials with engineered losses
		<i>Abhishek Gupta, Department of Mechanical Engineering, University of Wisconsin Madison; Madison, Wisconsin, 53706, USA; Arkady Kurnosov, Wave Transport in Complex Systems Lab, Physics Department, Wesleyan University; Middletown, CT-06459, USA; Tsampikos Kottos, Wave Transport in Complex Systems Lab, Physics Department, Wesleyan University; Middletown, CT-06459, USA; Ramathan Thevamaran, Department of Engineering Physics, University of Wisconsin Madison; Madison, Wisconsin, 53706, USA, Department of Mechanical Engineering, University of Wisconsin Madison; Madison, Wisconsin, 53706, USA</i>
		Speaker: Ramathan Thevamaran (Contributed Talk)
2:55 PM	3:15 PM	How to Achieve Any Dispersion Curve You Want
		<i>Pai Wang, Department of Mechanical Engineering, University of Utah; Arash Kazemi, University of Utah; Kshiteej Deshmukh, University of Utah; Yunya Liu, University of Utah; Bolei Deng, Massachusetts Institute of Technology; Henry Fu, University of Utah</i>
		Speaker: Pai Wang (Contributed Talk)
3:15 PM	3:35 PM	Non-periodic Design Discovery for Optimal Dynamic Responses in Flexible Mechanical Metamaterials
		<i>Giovanni Bordiga, Harvard University; Eder Medina, Harvard University; Vincent Tournat, CNRS, Le Mans Université; Katia Bertoldi, Harvard University</i>
		Speaker: Giovanni Bordiga (Contributed Talk)
3:35 PM	3:55 PM	Coiled phononic crystal with periodic rotational locking: Bragg scattering in the subwavelength regime
		<i>Carson Willey, Air Force Research Laboratory; Vincent Chen, Air Force Research Laboratory; David Roca, Universitat Politècnica de Catalunya; Armin Kianfar, University of Colorado Boulder; Mahmoud Hussein, University of Colorado Boulder; Abigail Juhl, Air Force Research Laboratory</i>
		Speaker: Mahmoud Hussein (Contributed Talk)

9.8 Multiscale Mechanics of Materials**Session: 4A, Room: Hotel-Corps I****Session Chair(s): Haoran Wang, haoran.wang@usu.edu**

2:15 PM	2:45 PM	A scalable coarse-grained modeling scheme of cellulose-based materials
		<i>Upamanyu Ray, University of Maryland, College Park; Zhenqian Pang, University of Maryland, College Park; Teng Li, University of Maryland, College Park</i>

		Speaker: Teng Li (Keynote Talk)
2:45 PM	3:15 PM	High-throughput mechanical testing of silver nanowires for the statistical analysis of their failure <i>Brizeida Ojeda, The University of Texas at Dallas; Rodrigo Bernal, The University of Texas at Dallas; Al-Mustasin Abir Hossain, The University of Texas at Dallas; Mohammad Waliullah, The University of Texas at Dallas</i>
		Speaker: Rodrigo Bernal (Keynote Talk)
3:15 PM	3:35 PM	The mode-I fracture mechanics of bilayer graphene <i>Muhammad Usama Arshad, Texas A&M University; Yanxiao Li, Missouri University of Science and Technology; Chenglin Wu, Missouri University of Science and Technology; Mohammad Naraghi, Texas A&M University, Department of Aerospace Engineering</i>
		Speaker: Muhammad Usama Arshad (Contributed Talk)
3:35 PM	3:55 PM	Elastic Modulus Mapping for Bovine Cortical Bone from Submillimeter- to Submicron-scales using PeakForce Tapping Atomic Force Microscopy <i>Yuxiao Zhou, Department of Mechanical Engineering, Texas A&M University, College Station, TX, Department of Biomedical Engineering, and Translational Tissue Engineering Center, Johns Hopkins University School of Medicine, Baltimore, MD, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA; Markus Kastner, Materials Research Institute, Pennsylvania State University, University Park, PA; Timothy Tighe, Materials Research Institute, Pennsylvania State University, University Park, PA; Jing Du, Department of Mechanical Engineering, Pennsylvania State University, University Park, PA</i>
		Speaker: Yuxiao Zhou (Contributed Talk)
Session: 4B, Room: Hotel-Corps I		
Session Chair(s): Haoran Wang, haoran.wang@usu.edu		
4:10 PM	4:30 PM	Coarse-Grained Molecular Dynamics Simulation for the Mechanical Behavior of Na-Montmorillonite Clay <i>Sarah Ghazanfari, North Dakota State University; HM Nasrullah Faisal, North Dakota State University; Kalpana Katti, North Dakota State University; Dinesh Katti, North Dakota State University; Wenjie Xia, North Dakota State University</i>
		Speaker: Sarah Ghazanfari (Contributed Talk)
4:30 PM	4:50 PM	Variational Asymptotic approach to Developing Homogenized Micropolar Models for Architected Materials <i>Vardhil Mehta, J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University; Bensingh Pancras, J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University; Arun Srinivasa, J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University; Junuthula Reddy, J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University</i>
		Speaker: Vardhil Mehta (Contributed Talk)
4:50 PM	5:10 PM	Molecular Dynamics Simulations of the Mechanical Behavior of Liquid Crystal Elastomers <i>Nanang Mahardika, Utah State University; Haoran Wang, Utah State University</i>
		Speaker: Nanang Mahardika (Contributed Talk)

9.9 Multiscale Modeling and Mechanics of Soft Matter and Hierarchical Materials**Session: 3A, Room: Hotel-Reveille II****Session Chair(s): Anna Tarakanova, anna.tarakanova@uconn.edu**

9:45 AM	10:05 AM	Investigation of Dynamic Impact Response of PMMA-Graphene Layered Nanocomposites Using Molecular Dynamics Simulations <i>Zhaoxu Meng, Clemson University; Zhangke Yang, Clemson University</i>
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		Speaker: Zhaoxu Meng (Contributed Talk)
10:05 AM	10:25 AM	Multi-scale Approaches to Modeling the Mechanical Properties of Polymer-Grafted Nanoparticle Assemblies
		<i>Sinan Keten, Northwestern University</i>
		Speaker: Sinan Keten (Invited Talk)
10:25 AM	10:45 AM	Responsive Polymers Enabled through Metal-ligand Coordination Bonding
		<i>Meredith Silberstein, Cornell University; Xinyue Zhang, Cornell University; Yuval Vidavsky, Cornell University</i>
		Speaker: Meredith Silberstein (Invited Talk)
10:45 AM	11:05 AM	Machine Learning Discovery of Multi-Functional Polyimides
		<i>Ying Li, University of Connecticut; Lei Tao, University of Connecticut; Jinlong He, University of Connecticut</i>
		Speaker: Ying Li (Invited Talk)
Session: 3B, Room: Hotel-Reveille II		
Session Chair(s): Robert Sinko, rsinko@niu.edu		
11:40 AM	12:00 PM	Deep learning framework for material design space exploration using active learning and data augmentation
		<i>Seunghwa Ryu, KAIST (Korea Advanced Institute of Science and Technology)</i>
		Speaker: Seunghwa Ryu (Invited Talk)
12:00 PM	12:30 PM	Soft Materials by Design: Unconventional Polymer Networks Give Extreme Properties
		<i>Xuanhe Zhao, MIT</i>
		Speaker: Xuanhe Zhao (Keynote Talk)
Session: 4A, Room: Hotel-Reveille II		
Session Chair(s): Zhaoxu Meng, zmeng@clemsn.edu		
2:15 PM	2:35 PM	Sub-molecular fracture and stability of tropocollagen
		<i>Zhao Qin, Syracuse University; Milad Masroui, Syracuse University</i>
		Speaker: Zhao Qin (Invited Talk)
2:35 PM	2:55 PM	Multiscale Modeling of Bioinspired Structures and its Applications
		<i>Arun Nair, Associate Professor, University of Arkansas</i>
		Speaker: Arun Nair (Invited Talk)
2:55 PM	3:15 PM	Finite Elements of Multiscale Mixtures (FE2M) Applied to the Mechanics of Cartilage
		<i>Ashkan Almasi, University of Connecticut; Phoebe Szarek, University of Connecticut; Tim Ricken, University of Stuttgart; David M. Pierce, University of Connecticut</i>
		Speaker: Ashkan Almasi (Contributed Talk)
3:15 PM	3:35 PM	Computational Design of Cellulose-Based Nanocomposites and Personal Protective Equipment (PPE)
		<i>Robert Sinko, Northern Illinois University</i>
		Speaker: Robert Sinko (Contributed Talk)
3:35 PM	3:55 PM	Multiscale Modeling of biobased and biomass materials
		<i>Francisco Martin-Martinez, Swansea University</i>
		Speaker: Francisco Martin-Martinez (Invited Talk)

9.10 Multiscale Modeling of Phase Transitions, Dislocations, and Twinning in Materials		
Session: 3A, Room: Hotel-Corps I		
Session Chair(s): Wei Gao, wei.gao@tamu.edu		
9:45 AM	10:05 AM	Moving window concurrent atomistic continuum schemes for modeling shock wave propagation
		<i>Alexander Davis, Auburn University; Vinamra Agrawal, Auburn University</i>
		Speaker: Vinamra Agrawal (Contributed Talk)
10:05 AM	10:25 AM	Long-Term Atomistic Characterization of Hydride Phase Transformation in Metallic Nanomaterials
		<i>Xingsheng Sun, University of Kentucky</i>
		Speaker: Xingsheng Sun (Contributed Talk)
10:25 AM	10:45 AM	Tracking twin boundary jerky motion at nanometer and microsecond scales
		<i>Emil Bronstein, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology; László Tóth, Department of Solid State Physics, University of Debrecen; Lajos Daróczy, Department of Solid State Physics, University of Debrecen; Dezső Beke, Department of Solid State Physics, University of Debrecen; Ronen Talmon, Viterbi Faculty of Electrical & Computer Engineering, Technion - Israel Institute of Technology; Doron Shilo, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology</i>
		Speaker: Emil Bronstein (Contributed Talk)
10:45 AM	11:05 AM	Phase Transformations in Crystalline Solids via Statistically-Averaged Gaussian Phase Packets
		<i>Shashank Saxena, Mechanics & Materials Lab, ETH Zürich, Zürich, Switzerland; Raphaël Mignot-Bahisson, D-MAVT, ETH Zürich, Zürich, Switzerland; Miguel Spinola, Mechanics & Materials Lab, ETH Zürich, Zürich, Switzerland; Prateek Gupta, Department of Applied Mechanics, Indian Institute of Technology Delhi, New Delhi, India; Dennis Kochmann, Mechanics & Materials Lab, ETH Zürich, Zürich, Switzerland</i>
		Speaker: Shashank Saxena (Contributed Talk)
11:05 AM	11:25 AM	Dislocation-density-based Crystal Plasticity Modeling of Halite at Different Temperatures and Orientations
		<i>Timothy Truster, University of Tennessee; Wadi Imseeh, University of Tennessee; Ran Ma, Columbia University; Amirsalar Moslehy, University of Tennessee; Khalid Alshibli, University of Tennessee</i>
		Speaker: Timothy Truster (Contributed Talk)
Session: 3B, Room: Hotel-Corps I		
Session Chair(s): Wei Gao, wei.gao@tamu.edu		
11:40 AM	12:00 PM	Atomistic Mechanisms of Phase Nucleation and Propagation in a Model Two-Dimensional System
		<i>Wei Gao, Texas A&M University</i>
		Speaker: Wei Gao (Contributed Talk)
12:00 PM	12:20 PM	Understanding lap shear tests of bilayer graphene via van der Waals interfacial dislocations
		<i>Bo Ni, Massachusetts Institute of Technology, Brown University; Huajian Gao, Brown University, Nanyang Technological University</i>
		Speaker: Bo Ni (Contributed Talk)

9.13 Recent Advances in Modeling and Simulation of Nano and Micromechanics of Materials		
Session: 3A, Room: Hotel-Century I		
Session Chair(s): Mauricio Ponga, mponga@mech.ubc.ca		
9:45 AM	10:15 AM	Plasticity without phenomenology: a first step
		<i>Sabyasachi Chatterjee, Indian Institute of Technology, Delhi; Giacomo Po, University of Miami; Xiaohan Zhang, Salesforce.com; Amit Acharya, Carnegie Mellon University; Nasr Ghoniem, UCLA</i>
		Speaker: Amit Acharya (Keynote Talk)
10:15 AM	10:45 AM	Structure-property linkages in HCP materials for damage-tolerant materials design
		<i>Shailendra Joshi, University of Houston; Shahmeer Baweja, University of Houston; Padmeya Indurkar, University of Cambridge</i>
		Speaker: Shailendra Joshi (Keynote Talk)
10:45 AM	11:05 AM	Multiscale Shape Memory and Superelasticity Responses of Shape Memory Ceramics
		<i>Mohsen Asle Zaeem, Colorado School of Mines</i>
		Speaker: Mohsen Asle Zaeem (Invited Talk)
11:05 AM	11:25 AM	Mechanical Properties of a Thermoplastic Elastomer Modelled as a Liquid-Crystal Elastomer
		<i>Manav Manav, ETH Zurich; Mauricio Ponga, University of British Columbia, Vancouver, Canada; Michael Ortiz, California Institute of Technology, Pasadena, USA</i>
		Speaker: Manav Manav (Invited Talk)
Session: 3B, Room: Hotel-Century I		
Session Chair(s): Amit Acharya, acharyaamit@cmu.edu		
11:40 AM	12:00 PM	Network Plasticity: Mesoscale-to-continuum modeling of microstructure-mediated plasticity
		<i>Brandon Runnels, University of Colorado Colorado Springs</i>
		Speaker: Brandon Runnels (Invited Talk)
12:00 PM	12:20 PM	Mechanics in Crumpling and Assembly of Graphene by Liquid Drying
		<i>Qingchang Liu, University of Virginia; Baoxing Xu, University of Virginia</i>
		Speaker: Baoxing Xu (Invited Talk)
Session: 4A, Room: Hotel-Century I		
Session Chair(s): Juan Pedro Mendez, jpmende@sandia.gov		
2:15 PM	2:45 PM	Adaptive grids for FFT based field dislocation mechanics
		<i>Javier Segurado, Universidad Politécnica de Madrid, IMDEA-Materials Institute; Rodrigo Santos, Universidad Politécnica de Madrid; Gonzalo Álvarez, Universidad Politécnica de Madrid</i>
		Speaker: Javier Segurado (Keynote Talk)
2:45 PM	3:05 PM	A free energy-based framework for scale bridging in crystalline solids--with some use of machine learning methods
		<i>Krishna Garikipati, University of Michigan</i>
		Speaker: Krishna Garikipati (Invited Talk)
3:05 PM	3:25 PM	Deformation Mechanics in Beryllium: A Molecular Dynamics Study

		<i>Kellen Andrew, California Polytechnic State University; William Schill, Lawrence Livermore National Laboratory; Dingyi Sun, Lawrence Livermore National Laboratory</i>
		Speaker: Dingyi Sun (Invited Talk)
3:25 PM	3:55 PM	Statistical Mechanics of Ordering in Materials from First Principles using Machine Learning and Monte Carlo Simulations
		<i>Markus Eisenbach, Oak Ridge National Laboratory</i>
		Speaker: Markus Eisenbach (Keynote Talk)
Session: 4B, Room: Hotel-Century I		
Session Chair(s): Dingyi Sun, sun33@llnl.gov		
4:10 PM	4:30 PM	A learning-based multi-scale model for the temperature-dependent behavior of Magnesium
		<i>Burigede Liu, University of Cambridge</i>
		Speaker: Burigede Liu (Invited Talk)
4:30 PM	4:50 PM	Quantum Transport Simulations for Si: P δ-layer systems
		<i>Juan Mendez Granado, Sandia National Laboratories; Denis Mamaluy, sandia national laboratories</i>
		Speaker: Juan Pedro Mendez Granado (Invited Talk)

9.14 Thermodynamics, Kinetics and Mechanical Behaviors of Metallic Glasses and High Entropy Alloys		
Session: 3A, Room: Hotel-Corps II		
Session Chair(s): Yue Fan, fanyue@umich.edu; Penghui Cao, caoph@uci.edu		
9:45 AM	10:15 AM	Solute-Strengthening in Alloys with Short-Range Order
		<i>William Curtin, Ecole Polytechnique Federale de Lausanne</i>
		Speaker: William Curtin (Keynote Talk)
10:15 AM	10:35 AM	Universal Mechanical Response of Metallic Glasses during Strain-rate-dependent Uniaxial Compression
		<i>Weiwei Jin, Yale University; Amit Datye, Yale University; Udo Schwarz, Yale University; Mark Shattuck, The City College of New York; Corey O'Hern, Yale University</i>
		Speaker: Weiwei Jin (Invited Talk)
10:35 AM	10:55 AM	The strain rate sensitivity of heterogeneous thin film metallic glasses: interplay between nanoscale heterogeneity and dynamic plasticity
		<i>Yucong Gu, The University of Alabama; Lin Li, The University of Alabama</i>
		Speaker: Lin Li (Invited Talk)
10:55 AM	11:15 AM	DFT study of the NiTi-X alloy systems for the Shape Memory High Entropy Alloys (SMHEAs) design
		<i>Guillermo Vazquez, Texas A&M University Department of Materials Science and Engineering; Raymundo Arróyave, Texas A&M University Department of Materials Science and Engineering; Sina Hossein Zadeh, Texas A&M University Department of Materials Science & Engineering</i>
		Speaker: Guillermo Vazquez (Contributed Talk)

Thematic Area 10. Special Symposia

10.1 Experimental & Theoretical Micro & Nano-Mechanics: Honoring Contributions Prof. Kyung-Suk Kim		
Session: 3A, Room: MSC-2500		
Session Chair(s): Renee Zhao, rrzhao@stanford.edu		
9:45 AM	10:05 AM	Thermo-hygral-mechanical behavior of porous materials based on NRB (Nguyen-Rahimi-Bazant) Isotherms
		<i>Hoang Nguyen, Northwestern University; Zdenek Bazant, Northwestern University; Anh Nguyen, Northwestern University</i>
		Speaker: Zdenek Bazant (Invited Talk)
10:05 AM	10:25 AM	Deep-Green Inversion to Extract Traction-Separation Relations at Material Interfaces
		<i>Kenneth Liechti, University of Texas; Congjie Wei, Department of Civil, Architectural, and Environmental Engineering Missouri University of Science and Technology, Rolla, MO 68409; Jiaxin Zha, Computer Science and Mathematics Division Oak Ridge National Laboratory, Oak Ridge, TN 37830; Chenglin Wu, Department of Civil, Architectural, and Environmental Engineering Missouri University of Science and Technology, Rolla, MO 68409</i>
		Speaker: Kenneth Liechti (Invited Talk)
10:25 AM	10:45 AM	Impact on metals at hypersonic velocities
		<i>KT Ramesh, Johns Hopkins University; Gary Simpson, Johns Hopkins University</i>
		Speaker: K.T. Ramesh (Invited Talk)
10:45 AM	11:05 AM	Nanoindentation Size Effects in Lithiated and Sodiated Battery Electrode Materials
		<i>Shuman Xia, Georgia Institute of Technology</i>
		Speaker: Shuman Xia (Invited Talk)
11:05 AM	11:25 AM	Fracture at the Two-Dimensional Limit
		<i>Jun Lou, Rice University</i>
		Speaker: Jun Lou (Invited Talk)
Session: 3B, Room: MSC-2500		
Session Chair(s): Wendy Crone, crone@engr.wisc.edu		
11:40 AM	12:00 PM	Atomic Scale Effects in Contact Mechanics and Friction
		<i>Robert Carpick, University of Pennsylvania</i>
		Speaker: Robert Carpick (Invited Talk)
12:00 PM	12:20 PM	Lamellar architectures in stiff biomaterials may not always be templates for enhancing toughness in composites
		<i>Haneesh Kesari, Brown University</i>
		Speaker: Haneesh Kesari (Invited Talk)
12:20 PM	12:40 PM	Corrosion: Interaction between Chemistry and Mechanics
		<i>Ashraf Bastawros, Iowa State University</i>
		Speaker: Ashraf Bastawros (Invited Talk)

10.2 A Celebration of Peridynamics: Honoring the contributions of Dr. Stewart Silling		
Session: 3A, Room: MSC-2501		
Session Chair(s): Yue Yu, yuy214@lehigh.edu; Ibrahim Guven iguven@vcu.edu		
9:45 AM	10:05 AM	Nonlocal equations: Analysis and fast solvers
		<i>Florin Bobaru, University of Nebraska-Lincoln; Adam Larios, University of Nebraska; Siavash Jafarzadeh, Pennsylvania State University; Isabel Safarik, University of Nebraska-Lincoln</i>
		Speaker: Adam Larios (Invited Talk)
10:05 AM	10:35 AM	Phase-Field Modeling and Peridynamics for Defect Dynamics, and an Augmented Phase-Field Model with Viscous Stresses
		<i>Kaushik Dayal, Carnegie Mellon University</i>
		Speaker: Kaushik Dayal (Keynote Talk)
10:35 AM	11:05 AM	Learning Peridynamic (Nonlocal) Operators for Material Modeling
		<i>Yue Yu, Lehigh University; Huaqian You, Lehigh University; Stewart Silling, Sandia National Laboratories; Marta D'Elia, Sandia National Laboratories</i>
		Speaker: Yue Yu (Keynote Talk)
11:05 AM	11:25 AM	On Neumann-type Boundary Conditions for Nonlocal Models
		<i>Michael Parks, Sandia National Laboratories; Petronela Radu, Department of Mathematics, University of Nebraska-Lincoln</i>
		Speaker: Michael Parks (Invited Talk)
Session: 3B, Room: MSC-2501		
Session Chair(s): Yue Yu, yuy214@lehigh.edu; Ibrahim Guven iguven@vcu.edu		
11:40 AM	12:00 PM	Multiscale Analysis of Failure in CNT Yarns using a Peridynamic Approach
		<i>Kyle Watson, Virginia Commonwealth University; Riley Hall, Virginia Commonwealth University; Ibrahim Guven, Virginia Commonwealth University</i>
		Speaker: Ibrahim Guven (Invited Talk)
12:00 PM	12:20 PM	The role of the shape of the coupling interface on the overall out-of-balance error in the coupling of peridynamics and classical continuum mechanics
		<i>Mirco Zaccariotto, Departement of Industrial Engineering, University of Padova, Italy.; Jacopo Bardiani, Departement of Industrial Engineering, University of Padova, Italy.; Greta Ongaro, Department of Structural and Geotechnical Engineering, Sapienza University of Rome, Italy.; Ugo Galvanetto, Departement of Industrial Engineering, University of Padova, Italy.</i>
		Speaker: Mirco Zaccariotto (Invited Talk)
12:20 PM	12:40 PM	Coupling Approaches for Classical Linear Elasticity and Bond-Based Peridynamic Models
		<i>Patrick Diehl, LSU; Serge Prudhomme, Polytechnique Montréal</i>
		Speaker: Patrick Diehl (Invited Talk)
Session: 4A, Room: MSC-2501		
Session Chair(s): Debdeep Bhattacharya, debdeepbh@lsu.edu; John Foster, jfoster@austin.utexas.edu		
2:15 PM	2:35 PM	Shape and Damage Effect on the Strength of Granular Aggregates and Application to Vehicle Mobility Using a Peridynamics-based Discrete Element Method
		<i>Debdeep Bhattacharya, Louisiana State University; Robert Lipton, Louisiana State University</i>

		Speaker: Debdeep Bhattacharya (Invited Talk)
2:35 PM	2:55 PM	A machine-learning framework for peridynamic material models with physical constraints <i>Xiao Xu, The University of Texas at Austin; John Foster, The University of Texas at Austin; Marta D'Elia, Sandia National Laboratories</i>
		Speaker: John Foster (Invited Talk)
2:55 PM	3:15 PM	Nonlinear nonlocal conservation laws: convergence of operators and solutions <i>anh.vo@huskers.unl.edu, VO</i>
		Speaker: Anh Vo (Contributed Talk)
3:15 PM	3:35 PM	Nonlocal Curvature with integrable kernel <i>Animesh Biswas, University of Nebraska-Lincoln</i>
		Speaker: Animesh Biswas (Contributed Talk)
3:35 PM	3:55 PM	Mathematical Analysis for Nonlocal Operators and Systems <i>Petronela Radu, University of Nebraska Lincoln</i>
		Speaker: Petronela Radu (Invited Talk)

10.4 Celebrating Mechanics of Materials: Honoring the legacy of Prof. Sia Nemat-Nasser		
Session: 4A, Room: MSC-2500		
Session Chair(s): Ghatu Subhash, subhash@ufl.edu; Mohammed A. Zikry, zikry@ncsu.edu		
2:15 PM	2:35 PM	Multi-resolution High-throughput Mechanical Characterization of Heterogeneous Materials <i>Surya Kalidindi, Georgia Institute of Technology</i>
		Speaker: Surya Kalidindi (Invited Talk)
2:35 PM	2:55 PM	Dislocation-based crystal plasticity finite element simulation for the micropillar compression <i>George Voyiadjis, Louisiana State University; Juyoung Jeong, Louisiana State University</i>
		Speaker: George Z. Voyiadjis (Invited Talk)
2:55 PM	3:15 PM	The Mechanics of Living Organisms: Some Observations <i>Marc Meyers, UC San Diego</i>
		Speaker: Marc Meyers (Invited Talk)
3:15 PM	3:35 PM	Reformulation of classical mechanics problems for efficient numerical computation <i>Muneo Hori, Japan Agency for Marine-Earth Science and Technology</i>
		Speaker: Muneo Hori (Invited Talk)
3:35 PM	3:55 PM	Poroviscoelasticity and fracture in gelatin-based hydrogels <i>Si Chen, University of Texas at Austin; Krishnaswamy Ravi-Chandar, University of Texas at Austin</i>
		Speaker: Krishnaswamy Ravi-Chandar (Invited Talk)