

Technical Program

Note: Talks with “IT” before their title indicate that it is an Invited Talk.

(Program updated June 16, 2022.)

Monday, June 20

TS 1: MONDAY MORNING, JUNE 20

Plenary Speaker

Nancy Sottos

Additive and Freeform Manufacturing of Thermosetting Polymers

8:30 – 9:45 AM

Room: AT&T 204; Chair: Ellen Arruda

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M103, Data-driven Approaches for Multiscale and/or Multiphysics Systems Chairs(s): Juner Zhu; Room: AT&T 301				
IT - Model-based Battery Management System (BMS) for Current and Next-generation Lithium Batteries <i>Venkat Subramanian*</i>	Variational Principle Neural Network for Dynamics of Conservative Physical Systems – Solving the Phase-Field Model of Dynamic Fracture <i>Wei Li*, Avtar Singh, Juner Zhu</i>			
#M104, Meshfree, Peridynamics, and Particle Methods: Contemporary Advances and Applications Chairs(s): Michael Hillman; Room: AT&T 204				
IT - A Neural Network-Enhanced Reproducing Kernel Particle Method for Modeling Strain Localization <i>J. S. Chen*, Jonghyuk Baek, Kristen Susuki</i>	Particle Conversion Methods for Computing Momentum Enhancement Due to Hypervelocity Impact <i>James Walker*, Sidney Chocron, Stephen Beissel</i>	An Upwind Reproducing Kernel Collocation Method for Convection-Dominated Problems <i>Jiarui Wang*, Michael Hillman</i>	An Immersed Peridynamics Model of Fluid-Structure Interaction Accounting for Material Damage and Failure <i>Keon Ho Kim*, Amneet Bhalla, Boyce Griffith</i>	
#M106, Theory and Applications of Functional Interpolation to Optimization and Control Chairs(s): Daniele Mortari; Room: AT&T 106				
Using Functional Interpolation to Perform Stress Concentration Analysis with Comparison to Finite Element Method <i>Logan Megginson*, Daniele Mortari</i>	IT - On Limit Analysis Using Functional Interpolation <i>Vigneshwaran Radhakrishnan*, Sahil Wajid, Daniele Mortari, Amine Benzerga</i>		IT - Pontryagin Neural Networks and Theory of Functional Connections for the Class of Optimal Control Problems with Quadratic Cost <i>Enrico Schiassi*</i>	

TS 1: MONDAY MORNING, JUNE 20

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M201, Studies in Electrokinetic and Electrohydrodynamic Flow Chairs(s): Michael Siegel, Room: AT&T Salon E				
<p>IT - Induced Charge Electrokinetic Flow for a Drop</p> <p><i>Michael Booty*, Manman Ma, Michael Siegel</i></p>	<p>Electrohydrodynamic Interactions of Drops</p> <p><i>Jeremy Kach*, Lynn Walker, Aditya Khair</i></p>	<p>Electrohydrodynamic Instability of and Equatorial Streaming from Lenticular Drops</p> <p><i>Brayden Wagoner*, Petia Vlahovska, Michael Harris, Osman Basaran</i></p>		
#M204, Recent Advances in Cardiovascular Fluid Mechanics Chairs(s): Rajat Mittal, Cyrus K Aidun; Room: Rowling Hall RRH 3.208 (Brazos)				
<p>IT - Non-invasive Monitoring of Transcatheter Aortic Valves via Embedded Wireless Pressure Microsensors – A CT scan Enabled In-silico Proof-of-concept</p> <p><i>Shantanu Bailoor, Jung-Hee Seo, Stefano Schena, Lakshmi Dasi, Rajat Mittal*</i></p>	<p>Modeling Transcatheter Aortic Valve Replacement (TAVR): A Fluid-Structure Interaction Model</p> <p><i>Jordan Brown*, Margaret Anne Smith, Jae Lee, Aaron Barrett, Charles Puelz, David Wells, Boyce Griffith</i></p>	<p>Pumping Mechanism of the Embryonic Heart Tube</p> <p><i>Alex Gendernalik*, David Bark</i></p>	<p>Computational Modeling of Flow through Prosthetic Heart Valves Using an Entropic Lattice-Boltzmann Method Based Multiscale Suspension Flow Solver</p> <p><i>Mustafa Usta*, Min Yun, Ajit Yoganathan, Cyrus Aidun</i></p>	
#M205, Biofluid Mechanics in Thrombosis and Hemostasis Chairs(s): Z. Leonardo Liu, David Bark, George Karniadakis, David Ku; Room: AT&T 202				
<p>IT - Machine Learning-Enhanced Multiscale Modeling of Platelet- and Flow-Mediated Thrombosis: In Vitro and In Silico Analysis of Adhesion Dynamics, Multi-Platelet Aggregation, and Thrombus Formation</p> <p><i>Danny Bluestein*, Jawaad Sherif, Peng Zhang, Changnian Han, Peineng Wang, Yicong Zhu, Ziji Zhang, Marvin Slepian, Yuefan Deng</i></p>	<p>A Three-Dimensional Multiscale Model for Platelet Aggregation Under Flow</p> <p><i>Kaushik Shankar*, Talid Sinno, Scott Diamond</i></p>	<p>Multiscale Modelling Unravels the Biophysics of Shear-induced Platelet Aggregation (SIPA)</p> <p><i>Z. Leonardo Liu*, Cyrus K Aidun, David N Ku</i></p>		
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TS 1: MONDAY MORNING, JUNE 20

#M314, Mechanics and Physics of Advanced Manufacturing Processes – Surfaces, Materials and Deformation Chairs(s): Koushik Viswanathan; Room: Rowling Hall RRH 3.216 (Comal)				
Size Effect, Friction and Adhesion in Small-Scale Cutting of Metals <i>Gan Feng, Dinakar Sagapuram*</i>	Surface Embrittlement of Metals by Sub-100 nm Organic Films <i>Mohammed Naziru Issahaq*, Anirudh Udupa, Debapriya Pinaki Mohanty, Tatsuya Sugihara, Jason Davis, Ronald Latanision, Srinivasan Chandrasekar, James B. Mann</i>	Wrinkle-Roller Interaction in Elastic Sheets <i>R. S. Hutton*, J. L. Brown, J. A. Hanna</i>	Hybrid Homogenization Theory with Surface/Interface Effects for Random Nanocomposites <i>Shizhen Yin*, Marek-jerzy Pindera</i>	
#M315, New Metamaterial Concepts Chairs(s): Michael R. HabermRoom: AT&T Salon D				
IT - On the Realization of Topological Edge States on a Dislocation Inter-face of an Elastic Waveguide <i>Fabio Semperlotti*, Ting-Wei Liu</i>	Dynamics of Bilayer Topological Maxwell Lattices <i>Mohammad Charara*, James McInerney, Kai Sun, Xiaoming Mao, Stefano Gonella</i>	Design-strategies for Topological Metamaterials <i>Emil Prodan*, Wenting Cheng, Camelia Prodan</i>	A Geometric Modeling Framework for Top-Down Structural Design of Auxetic Materials <i>Md Kamrul Hasan*, Matthew Ebert, Riddhi Adhikari, Kai Lupo, Ergun Akleman, Matt Pharr, Vinayak R. Krishnamurthy</i>	
#M318, Physics-Based and Data-Driven Multiscale Modeling of Nano-Materials Chairs(s): Susanta Ghosh, Room: AT&T 105				
IT - Multiscale Simulation Techniques for Sub-Continuum Transport <i>Jayathi Y. Murthy*</i>	Computational Design of High-Entropy Alloys with Optimal Mechanical Performance <i>Mauricio Ponga*</i>	Multiscale Modeling of Nano-Materials Using Novel Concurrent Atomistic-Continuum Coupling <i>Sankha Subhra Aditya*, Samit Roy</i>	A Manifold Learning Model for the Deformation of Multiwalled Carbon Nanotubes under Torsion and Bending <i>Upendra Yadav, Shashank Pathrudkar, Susanta Ghosh*</i>	
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TS 1: MONDAY MORNING, JUNE 20

#M324, Mechanics of Soft Matter: From Living Systems to Functional Composites Chairs(s): Renee Zhao, Room: AT&T 101			
<p>IT - Transparent Ionogels with Extreme Toughness, Strength and Stiffness by In Situ Phase Separation</p> <p><i>Michael Dickey*, Meixiang Wang, Jian Hu</i></p>	<p>Mechanisms of Force Transmission in Fiber Networks</p> <p><i>Mainak Sarkar*, Jacob Notbohm</i></p>	<p>Modeling of Collagen Fiber Orientation in the Plane of the Porcine Dermis</p> <p><i>Suman Jaiswal*, Siva Nadimpalli, Samuel Lieber, Shawn Chester</i></p>	<p>A Higher-order Morphoelastic Beam Model for Biologically Growing Tubes and Filaments</p> <p><i>Jun Zhong, Vikas Srivastava*</i></p>
#M325, Mechanics of Liquid Crystal Elastomers Chairs(s): Ruobing Bai, Room: Rowling Hall RRH 4.308			
<p>IT - Recent Advances in Liquid Crystal Elastomers</p> <p><i>Kaushik Bhattacharya*</i></p>	<p>Flexoelectricity, Light and Liquid Crystal Elastomers</p> <p><i>Amir Hossein Rahmati*, Kosar Mozaffari, Liping Liu, Pradeep Sharma</i></p>	<p>How Liquid Crystal Networks Work in Theory</p> <p><i>Guido Kusters*, Nicholas Tito, Paul van der Schoot, Cornelis Storm</i></p>	
#M330, Mechanics of the Human Skull and Brain Chairs(s): Alper Erturk, Room: Rowling Hall RRH 3.414			
<p>IT - Transcranial Imaging with Light and Sound</p> <p><i>Hector Estrada*, Daniel Razansky</i></p>	<p>Mechanics of Ultrasonic Neuromodulation</p> <p><i>Hossein Salahshoor*, Mikhail Shapiro, Michael Ortiz</i></p>	<p>Enhancing Wave Transmission through the Skull with Non-Hermitian Complementary Acoustic Metamaterials</p> <p><i>Steven Craig*, Phoebe Welch, Chengzhi Shi</i></p>	<p>Experimental and Numerical Ultrasound Transmission Analysis in Temporal and Parietal Bones at Large Incidence Angles</p> <p><i>Matteo Mazzotti*, Eetu Kohtanen, Alper Erturk, Massimo Ruzzene</i></p>
#M335, Instabilities in Solids and Structures Chairs(s): Stavros Gaitanaros, Room: AT&T 201			
<p>IT - Domain Formation and Soft Modes of Deformation in Reinforced Elastomers</p> <p><i>Joshua Furer, Pedro Ponte Castañeda*</i></p>	<p>Formation of Surface Wrinkles and Creases in Constrained Dielectric Elastomers Subject to Electromechanical Loading</p> <p><i>Chad Landis*, Rui Huang, John Hutchinsion</i></p>	<p>Instability-induced Pattern Transformation in Soft Particulate Composites</p> <p><i>Dean Chen*, Stephan Rudykh, Nitesh Arora, Yuhai Xiang, Jian Li, Viacheslav Slesarenko</i></p>	<p>Snap-Through Instability Enables Fast Soft Robots Based on Thermal Actuation</p> <p><i>Shuang Wu*, Gregory Baker, Jie Yin, Yong Zhu</i></p>

TS 2: MONDAY AFTERNOON, JUNE 20

NSF Special Talk

Wendy Crone

Funding Opportunities for Mechanics at the National Science Foundation

1:45 PM

Room: AT&T 116

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#M103, Data-driven Approaches for Multiscale and/or Multiphysics Systems Chairs(s): Sulin Zhang, Room: AT&T 301				
<p>IT - Machine Learning Accelerated, High Throughput, Multi-Objective Optimization of Multiprincipal Element Alloys</p> <p><i>Tian Guo, Lianping Wu, Teng Li*</i></p>	<p>Hybrid Elastoplasticity with Data-Driven Yielding and Model-Based Hardening</p> <p><i>Jan Niklas Fuhg*, Nikolaos Bouklas</i></p>	<p>Relate Material and Structural Scale Nondestructive Evaluation Data into a Computational Mechanics Framework</p> <p><i>Mohammadreza Bahadori*, Emine Tekerek, Antonios Kotsos</i></p>	<p>Scaling in Anti-Plane Elasticity on Random Shear Modulus Fields with Fractal and Hurst Effects</p> <p><i>Yaswanth Sai Jetti*, Martin Ostoja-Starzewski</i></p>	
#M104, Meshfree, Peridynamics, and Particle Methods: Contemporary Advances and Applications Chairs(s): Zhen Chen, Room: AT&T 204				
<p>Quasi-static Peridynamic Evolution with Unstable Nonlocal Forces</p> <p><i>Robert Lipton*, Debdeep Bhattacharya</i></p>	<p>Solving Large Peridynamic Models in Corrosion and Dynamic Fracture</p> <p><i>Florin Bobaru*, Longzhen Wang, Farzaneh Mousavi, Siavash Jafarzadeh, Adam Larios</i></p>	<p>An Ultra-high Speed Reproducing Kernel Particle Method</p> <p><i>Siavash Jafarzadeh*, Michael Hillman</i></p>	<p>Solver Selection and Complexity Analysis for the Meshfree Methods</p> <p><i>Yanran Wang*, Michael Hillman</i></p>	<p>Minimal Positive Stencils in Meshfree Finite Difference Methods for Linear Elliptic PDEs</p> <p><i>Qihao Ye*, Xiaochuan Tian</i></p>
#M106, Theory and Applications of Functional Interpolation to Optimization and Control Chairs(s): Andrew Sinclair, Room: AT&T 106				
<p>Pontryagin Neural Networks for Solving Hypersonic Optimal Control Problems</p> <p><i>Kristofer Drozd*</i></p>	<p>IT - Physics-Informed Neural Networks and Theory of Functional Connections: Applications to Guidance and Control in Aerospace Systems</p> <p><i>Roberto Furfaro*, Enrico Schiassi, Andrea Scorsoglio</i></p>	<p>IT - Boltzmann Neural Networks and Theory of Functional Connections for the Class of Rarefied Gas Dynamics Problems in the Bhatnagar-Gross-Krook Approximation</p> <p><i>Mario De Florio*, Enrico Schiassi, Roberto Furfaro</i></p>		
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TS 2: MONDAY AFTERNOON, JUNE 20

#M201, Studies in Electrokinetic and Electrohydrodynamic Flow Chairs(s): Michael Booty, Room: AT&T Salon E				
IT - Biological Molecular Solvation with Stokes Flow and Poisson-Boltzmann Electrostatics <i>Bo Li*</i>	Polarization of Disc and Ring Electrodes in High-Conductivity Electrolyte Solutions <i>Kenneth Yamamoto*, Anil Köklü, Ali Beskok, Vladimir Ajaev</i>	Electrohydrodynamic Interfacial Instability at the Stagnation Point of a Converging Flow <i>Mohammadhossein Firouznia*, Michael Miksis, Petia Vlahovska, David Saintillan</i>		
#M204, Recent Advances in Cardiovascular Fluid Mechanics Chairs(s): Cyrus K Aidun, Mustafa Usta, Room: Rowling Hall RRH 3.208 (Brazos)				
IT - Learning Whole Heart Mesh Generation from Cardiac Images <i>Fanwei Kong, Shawn Shadden*</i>	IT - Prediction of Flow Circulation and Oxygenation in Patient-Specific Abdominal Aortic Aneurysms <i>Alexis Throop, Nicole Bohatch, Rana Zakerzadeh*</i>	Dynamics Modes of Inflow Jet in Brain Aneurysms <i>Trung Le, Tam Nguyen*</i>		
#M205, Biofluid Mechanics in Thrombosis and Hemostasis Chairs(s): Z. Leonardo Liu, David Bark, George Karniadakis, David Ku, Room: AT&T 202				
Cell Distributions and Segregation During Blood Flow in Sickle Cell Disease and Iron Deficiency Anemia within Straight and Serpentine Vascular Geometry <i>Xiaopo Cheng*, Christina Caruso, Wilbur Lam, Michael Graham</i>	The Influence of Vessel Puncture on Cellular Flow Mechanics and Possible Implications for Hemostasis <i>Christian Spieker*, Gábor Závodszy, Max van der Kolk, Alfons Hoekstra</i>	Learning the Hidden Hemorheology in Microcirculation Based on Physics-Informed Neural Networks (PINNs) <i>Z. Leonardo Liu*, Shengze Cai, George Em Karniadakis</i>	Simulating Detailed Cellular Blood Flow in Diabetic and High Shear-Rate Diseases <i>Gabor Zavodszky*, Christian Spieker, Britt van Rooij, Benjamin Czaja, David de Kanter, Alfons Hoekstra</i>	
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TS 2: MONDAY AFTERNOON, JUNE 20

#M210, Complex Fluids and Soft Matter Chairs(s): Vivek Narsimhan, Room: Rowling Hall RRH 3.304				
<p>Flow-Induced Scission of Surfactant Micelles under Shear Flow</p> <p><i>Yusuke Koide*, Susumu Goto</i></p>	<p>The Effect of Flow Symmetry on Collective Dynamics of Strongly Confined Drops in Hele–Shaw Geometries</p> <p><i>Sagnik Singha*, Masoud Norouzi, Siva Vanapalli, Mark Vaughn, Jerzy Blawdziewicz, Abhilash Reddy Malipeddi, Kausik Sarkar</i></p>	<p>Two- and Three-Dimensional Simulations of an Elastoviscoplastic Material in a Thin Mold-Filling Geometry</p> <p><i>Josh McConnell*, Weston Ortiz, Anne Grillet, Rekha Rao</i></p>	<p>Periodic Deformation of Semiflexible Colloidal Chains in Eccentric Time-Varying Magnetic Fields</p> <p><i>Aldo Spatafora-Salazar*, Lucas H. P. Cunha, Sibani Lisa Biswal</i></p>	
#M214, Electrokinetics for Nano and Microfluidics Chairs(s): Henry Chu, Room: AT&T 203				
<p>IT - Delivering Colloids to Targets Hidden Within Porous Media</p> <p><i>Todd Squires*, Huanshu Tan, Xiaoyu Tang, Parth Shah</i></p>	<p>Conical Nanopores Can Serve as Nanopumps</p> <p><i>Aaron Daniel Ratschow*, Doyel Pandey, Benno Liebchen, Somnath Bhattacharyya, Steffen Hardt</i></p>	<p>Confinement-Dependent Diffusiophoresis of Nanoparticles in Porous Collagen Hydrogels</p> <p><i>Sangwoo Shin*</i></p>	<p>Tuning the Spreading of Chemotactic and Diffusiophoretic Species by Hydrodynamic Flows</p> <p><i>Henry Chu*, Stephen Garoff, Robert Tilton, Aditya Khair</i></p>	
#M224, High-Speed Boundary Layer Transition Chairs(s): Christoph Brehm, Room: Rowling Hall RRH 3.406				
<p>IT - Stability of Hypersonic Flows</p> <p><i>Helen Reed*</i></p>	<p>Receptivity of Supersonic Boundary-Layer to Distributed Surface Roughness</p> <p><i>Bijaylakshmi Saikia*, Christoph Brehm</i></p>	<p>Effect of Surface Cooling on Hypersonic Boundary Layer Transition for Sharp and Blunt-Tipped Cones</p> <p><i>Mathew Major, Luke Hill*, Mark Reeder, Matthew Borg</i></p>		
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TS 2: MONDAY AFTERNOON, JUNE 20

#M314, Mechanics and Physics of Advanced Manufacturing Processes – Surfaces, Materials and Deformation Chairs(s): Dinakar Sagapuram, Room: Rowling Hall RRH 3.216 (Comal)				
<p>Novel Correlations Between Process Forces and Void Morphology for Effective Detection and Minimization of Defects during Friction Stir Welding</p> <p><i>Mohammad Ali Ansari*, Frank Pfefferkorn, Shiva Rudraraju</i></p>	<p>Determining Large Strain Metal Plasticity Parameters Using In-Situ Full-Field Observations of Cutting</p> <p><i>Harshit Chawla*, Shwetabh Yadav, Hrayer Aprahamian, Dinakar Sagapuram</i></p>	<p>Exploiting Flow Kinematics to Better Understand Large Strain Deformation Processes</p> <p><i>Deepika Gupta*, Anirudh Udupa, Puli saikiran, Koushik Viswanathan</i></p>	<p>Simulation of Orthogonal Machining of Aluminum 6061 Alloy with Superimposed Chip Pulling</p> <p><i>Changlong Cui*, Homar Lopez Hawa, Vis Madhavan, Wilfredo Moscoso</i></p>	<p>Application of Photoelasticity in High-Speed Orthogonal Cutting for Determination of Cutting Forces & Contact Length during Shear Banding</p> <p><i>Aditya Pandey*, Pavan Bhavsar, Viswanatha Madhavan, Wilfredo Moscoso-Kingsley</i></p>
#M315, New Metamaterial Concepts Chairs(s): Stefano Gonella, Room: AT&T Salon D				
<p>2D Transformation Elasticity for Perfect Wave Cloaking</p> <p><i>Guoliang Huang*</i></p>	<p>Using Representation Theory to Understand Acoustic Wave Propagation through Deformable Phononic Crystals</p> <p><i>Tejas Dethé*, Andrej Kosmrlj</i></p>	<p>On Some Recent Advances on the Theory of Field Patterns</p> <p><i>Ornella Mattei*</i></p>	<p>Functional Architected Materials by Harnessing Structure Instabilities</p> <p><i>Yuzhen Chen, Tianzhen Liu, Lihua Jin*</i></p>	
#M318, Physics-Based and Data-Driven Multiscale Modeling of Nano-Materials Chairs(s): Susanta Ghosh, Room: AT&T 105				
<p>IT - From ab-initio to Continuum: Data-Driven Multiscale Methods for Soft/Hard Nanomaterials</p> <p><i>N.R. Aluru*</i></p>	<p>Ab initio Electromechanical Response of Nanotubes – from Existing Materials to Unprecedented Ones</p> <p><i>Hsuan Ming Yu*, Amartya Banerjee</i></p>	<p>The Effect of Microstructural Modifications on Ultrasonic Wave Propagation and Scattering in Ice Composites, a Numerical Study</p> <p><i>Farshad Ghanbari*, Andrea P. Arguelles, Francesco Simonetti, Christian Peco</i></p>	<p>An Atomistic-based Finite Deformation Continuum Membrane Model for Monolayer Transition Metal Dichalcogenides</p> <p><i>Upendra Yadav, Susanta Ghosh*</i></p>	
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TS 2: MONDAY AFTERNOON, JUNE 20

#M324, Mechanics of Soft Matter: From Living Systems to Functional Composites Chairs(s): Renee Zhao, Shuai Wu, Room: AT&T 101				
IT - Salt-Induced Volume Phase Transition of Polyelectrolyte Gels <i>Rui Huang*</i>	Elastomers Filled with Liquid Inclusions: Theory, Numerical Implementation, and Some Basic Results <i>Oscar Lopez-Pamies, Kamalendu Ghosh*</i>	Soft Magnetolectric Materials <i>Amir Hossein Rahmati*, Rong Jia, Kai Tan, Liping Liu, Qian Deng, Xuanhe Zhao, Pradeep Sharma</i>	Force-mediated Cellular Anisotropy and Plasticity Dictate the Elongation Dynamics of Embryos <i>Chao Fang, Yuan Lin*</i>	
#M325, Mechanics of Liquid Crystal Elastomers Chairs(s): Lihua Jin, Room: Rowling Hall RRH 4.308				
IT - Shape Morphing Liquid Crystal Elastomers: 4D Printing and Self-Assembled Structures <i>Taylor Ware*</i>	Spatially Programmed Liquid Crystal Elastomers for Reconfigurable 3D Structures <i>Xueju Wang*, Yi Li</i>	Optimal Design of Soft Responsive Structures and Actuators <i>Andrew Akerson*, Kaushik Bhattacharya</i>	Mesoscale Photomechanical Coupling in Photoactive Liquid Crystal Elastomers <i>Ruobing Bai*</i>	
#M330, Mechanics of the Human Skull and Brain Chairs(s): Matteo Mazzotti, Room: Rowling Hall RRH 3.414				
IT - Natural Modes of 3D Vibration of the Human Brain in Vivo <i>Jordan Escarcega, Andrew Knutsen, Dzung Pham, Philip Bayly*</i>	Frequency Response of the Human Brain Substructures During Helmeted Side Impacts <i>Fargol Rezayaraghi*, Javid Abderezaei, Efe Ozkaya, Aymeric Pionteck, Devlin Stein, Mehmet Kurt</i>	Computational Modeling and Non-Contact Vibroacoustic Experiments for Elastic Parameter and Damping Identification of Dry Cranial Bones <i>Eetu Kohtanen, Matteo Mazzotti*, Massimo Ruzzene, Alper Erturk</i>		
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TS 2: MONDAY AFTERNOON, JUNE 20

#M335, Instabilities in Solids and Structures

Chairs(s): Christelle Combescure, Room: AT&T 201

Energy Focusing in Snapping Cables	Piercing Soft Solids: A Mechanical Theory for Surface Rupture and Dissipative Mechanisms	Delayed Oscillator Model for a Vessel-Valve-Pipe System	Cells Exploit a Phase Transition to Mechanically Remodel the Fibrous Extracellular Matrix	Asymmetric Buckling and Mode-switching of an Elastica under a Lateral Restraining Force
<i>Abhinav Ravindra Dehadrai*, James Hanna</i>	<i>Stefano Fregonese*, Mattia Bacca</i>	<i>Gabor Stepan*, Fanni Kadar, Csaba Hos</i>	<i>Georgios Grekas*, Phoebus Rosakis, Chrysovalantou Kalaitzidou, Maria Proestaki, Jacob Notbohm, Charalambos Makridakis, Guruswami Ravichandran</i>	<i>Kelin Chen, Colin Bruce, Yannis Korkolis*</i>

TS 3: MONDAY EVENING, JUNE 20

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#M103, Data-driven Approaches for Multiscale and/or Multiphysics Systems Chairs(s): Christos Athanasiou, Room: AT&T 301				
<p>IT - From Data Driven to Physics Informed PDE Surrogates</p> <p><i>Nikolaos Bouklas*, Jan Niklas Fuhg, Arnav Karmakar, Teeratom Kadeethum</i></p>	<p>Data-Driven Design Optimization Approach for Metal Additive Manufacturing Using Physics-Based Surrogate Modeling</p> <p><i>Vignesh Perumal*, Emine Tekerek, Alex Riensche, Lars Jacquemeton, Kevin Cole, Harold Halliday, Prahlada Rao, Ahmad Najafi, Antonios Kotsos</i></p>	<p>A Physics-based Data-Driven Approach for Modeling of Environmental Degradation in Elastomers</p> <p><i>Aref Ghaderi*, Roozbeh Dargazany</i></p>		
#M104, Meshfree, Peridynamics, and Particle Methods: Contemporary Advances and Applications Chairs(s): J. S. Chen, Room: AT&T 204				
<p>Study of Multiscale Interfacial Feature Effects on Failure Initiation via Particle-Based Methods</p> <p><i>Zhen Chen*</i></p>	<p>Study of the Shear-Band Evolution Across the Interface Between Concurrent Micro- and Nano-Scale Simulation</p> <p><i>Yu-Chen Su*, Zhen Chen</i></p>	<p>Variational Multiscale Methods for Constraints: Essential Boundary Conditions and a Link to Nitsche's Method</p> <p><i>Andrew Groeneveld*, Michael Hillman</i></p>	<p>A Nonlocal Lattice Particle Method for Heat Conduction Modeling and Analysis</p> <p><i>Donglai Liu*, Hailong Chen</i></p>	<p>Solving Boundary Value Problems by Strong and Weak Form Methods Using Reproducing Kernel Peridynamics</p> <p><i>Feihong Liu*, Michael Hillman</i></p>
#M106, Theory and Applications of Functional Interpolation to Optimization and Control Chairs(s): Roberto Furfaro, Room: AT&T 106				
<p>Coordinate-Invariant Kalman Filtering</p> <p><i>Andrew Sinclair*, Scott Norrix, Ethan Burnett, Eric Butcher</i></p>	<p>Using Functional Interpolation to Solve Boundary Value Geodesic Problem</p> <p><i>Daniele Mortari*</i></p>	<p>Fractal-Wavelet Modeling in Dynamical Systems</p> <p><i>Emanuel Guariglia*</i></p>	<p>IT - Pontryagin Neural Networks Applied to Optimal Control Problems for Aerospace Applications</p> <p><i>Andrea D'Ambrosio*</i></p>	
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TS 3: MONDAY EVENING, JUNE 20

#M204, Recent Advances in Cardiovascular Fluid Mechanics Chairs(s): Mustafa Usta, Room: Rowling Hall RRH 3.208 (Brazos)				
IT - A Microphysiological Model of Blood Cell-Endothelium Interactions to Study Drug Delivery Mechanisms <i>Qin (Maggie) Qi*, Junling Guo, Christine Hamadani, Samir Mitragotri</i>	Hybrid Approach for Cell Transport in Cardiovascular Flows <i>Lahcen Akerkouch*, Trung Le</i>	IT - Particle Transport in Blood Flow Across Scales <i>Cyrus Aidun*, Zixiang Liu</i>		
#M207, Microswimming in Newtonian and Complex Fluid Environments Chairs(s): Becca Thomases, Room: AT&T Salon E				
IT - A Swirling Robotic Swimmer Propelled Only by Fluid Normal Stresses <i>Eric Shaqfeh*, Jeremy Binagia, Laurel Kroo, Noah Eckman, Manu prakash</i>	Formation of a Strong Negative Wake Behind a Helical Swimmer in a Viscoelastic Fluid <i>Shijian Wu, Tom Solano, Kouros Shole*, Hadi Mohammadigoushki</i>	Helical Swimming in Yield Stress Fluids <i>Farshad Nazari, Kouros Shole, Hadi Mohammadigoushki*</i>		
#M210, Complex Fluids and Soft Matter Chairs(s): Jeffrey Morris, Room: Rowling Hall RRH 3.304				
Experimental and Theoretical Studies of Cross-Stream Migration of Non-Spherical Particles in a Quadratic Flow of Viscoelastic Fluid <i>Cheng-Wei Tai*, Shiyang Wang, Vivek Narsimhan</i>	Shear-Induced Gradient Diffusivity of a Red Blood Cell Suspension: Effects of Cell Dynamics from Tumbling to Tank-Treading <i>Abhilash Malipeddi, Kausik Sarkar*</i>	Homogenization Estimates for the Rheology of Suspensions of Highly Deformable Particles Under Large Amplitude Oscillatory Shear <i>Pedro Ponte Castaneda*, Christoph Kammer</i>	Dynamics of Dense Suspension Droplet Impacting on Liquid Surfaces <i>Boqian Yan, Xiaoyu Tang*</i>	
03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM

TS 3: MONDAY EVENING, JUNE 20

#M214, Electrokinetics for Nano and Microfluidics Chairs(s): Aditya Khair, Room: AT&T 203				
<p>IT - Diffusiophoretic and Diffusioosmotic Dispersion in Channel Flows</p> <p><i>Jesse Ault*</i></p>	<p>Surface Charge Heterogeneity Directed Particle Migration and Assembly</p> <p><i>Xiaoyu Tang*, Parth Shah, Todd Squires</i></p>	<p>Coion-Motion-Dominated Electroosmotic Transport and Simultaneous Electrokinetic Energy Generation and Flow Augmentation in Polyelectrolyte-Brush Functionalized Nanochannels</p> <p><i>Siddhartha Das*, Turash Pial, Hamoor Sachar</i></p>	<p>Fluid Elasticity-Enhanced Dielectrophoretic Focusing of Particles in Very Dilute Polymer Solutions</p> <p><i>Mahmud Raihan*, Heston Dort, Xiangchun Xuan</i></p>	<p>CO2-Driven Diffusiophoresis and Water Cleaning: Similarity Solutions for Predicting the Exclusion Zone in a Channel Flow</p> <p><i>Suin Shim*, Mrudhula Baskaran, Ethan H. Thai, Howard A. Stone</i></p>
#M222, Elastic and Elasto-Inertial Turbulence: New Discoveries and Remaining Challenges Chairs(s): Yves Dubief, Room: Rowling Hall RRH 3.414				
<p>IT - The Self-Sustaining Cycle of Elastic Turbulence: Chaotic Polymer Dynamics Driven by Small-Scale Travelling Elastic Waves and Large-Scale Diwhirls</p> <p><i>Bamin Khomami*, NanSheng Liu, Jiaying Song</i></p>	<p>Direct Numerical Simulations of Polymer Solutions for Laminar-Turbulence Transition in Channel Flow</p> <p><i>Alexia Martinez Ibarra*, Jae Sung Park</i></p>	<p>Inertio-elastic Instabilities and Turbulence in Submerged Viscoelastic Jets</p> <p><i>Sami Yamanidouzisorkhabi*, Yashasvi Raj, Tamer A. Zaki, Gareth H. McKinely, Irmgard Bischofberger</i></p>		
#M224, High-Speed Boundary Layer Transition Chairs(s): Christoph Brehm, Room: Rowling Hall RRH 3.406				
<p>Physical Insight into Shock Wave Turbulent Boundary Layer Interaction of Compressible Flows</p> <p><i>Vahid Tavanashad*, Kourosh Shoele</i></p>	<p>PSE Energy-Budget Analysis for the Extension of Amplification Factor Transport Transition Model</p> <p><i>Koen Groot*, Jay Patel, Caleb Saiyasak, James Coder, Douglas Stefanski, Helen Reed</i></p>			
03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM

Tuesday, June 21

TS 4: TUESDAY MORNING, JUNE 21

Plenary Speaker

Ellen Kuhl

Data-driven Modeling and Physics-based Learning in the Biomedical Sciences

8:30 – 9:45 AM

Room: AT&T 204; Chair: Krishna Garikipati

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M103, Data-driven Approaches for Multiscale and/or Multiphysics Systems Chairs(s): Wei Li, Room: AT&T 301				
IT - Tailoring Structural Stochasticity in Property-Driven Computational Microstructure Design <i>Hongyi Xu*, Leidong Xu</i>	Deep-Green Inversion to Extract Traction-Separation Relations at Material Interfaces <i>Congjie Wei, Jiaxin Zhang, Kenneth M. Liechti, Chenglin Wu*</i>	Inverse Modeling of Interfacial Traction Separation Relations Using an Energy Conservation Integral Based Deep Complex Network <i>Congjie Wei*, Jiaxin Zhang, Kenneth M. Liechti, Chenglin Wu</i>	Deep Springs: Inverse Design of Suspended Elastic Beams Using Deep Neural Networks <i>Yongkyu Lee*, Leixin Ma, Mohammad Khalid Jawed</i>	
#M205, Biofluid Mechanics in Thrombosis and Hemostasis Chairs(s): Z. Leonardo Liu, David Bark, George Karniadakis, David Ku, Room: AT&T 202				
IT - VWF Conformation, Interaction with Nanoparticles and Potential Impact on SIPA <i>Yuanzheng Zhu, Z. Leonardo Liu, Michael Griffin, Mustafa Usta, David Ku*, Cyrus Aidun</i>	Platelets and von Willebrand Factor after Exposure to Turbulent, but Low Shear Flow with Implications in Mechanical Circulatory Support <i>Alice Liu*, David Bark</i>	Rare Event Prediction of von Willebrand Factor Multimer Unfolding in Extensional Flow <i>Sagar Kania*, Peter Nguyen, Alparslan Oztekin, Edmund Webb III</i>	Thrombolytic Efficacy of Aptamer DTRI-031 in a Microfluidic Model of Ischemic Stroke and Reperfusion <i>Rassam Rassam*, Kimberly Thomas, Christina Daniel, Phillip Spinella, Shahid Nimjee, Susan Shea</i>	
#M207, Microswimming in Newtonian and Complex Fluid Environments Chairs(s): Eric Shaqfeh, Room: AT&T Salon E				
IT - The Hydrodynamics of Active Matter in Inhomogeneous Environments <i>Gwynn Elfring*</i>	Topography-Driven Control of Active Nematic Swarms <i>Joseph Barakat*, Kevin Modica, Sho Takatori</i>	Coarse-Graining Kinetic Theories of Polar Active Suspensions <i>Scott Weady*, David Stein, Michael Shelley</i>	Directed Anomalous Transport of Self-Propelled Nanoparticles in Newtonian Fluid with Thermal Gradients <i>Ali Mohammadi*, Zhen Li</i>	

TS 4: TUESDAY MORNING, JUNE 21

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M214, Electrokinetics for Nano and Microfluidics Chairs(s): Aditya Khair, Room: AT&T 203				
IT - Towards Reduced-order Modeling of Electroconvection <i>Ali Mani*</i>	Electroconvection with Pattern Size Optimization <i>Shirin Provvat*, Kourosh Shoele, Mark Sussman</i>	Interfacial Charge Layering in Polar Liquids <i>J. Pedro de Souza*, Alexei Kornyshev, Martin Bazant</i>	Charging of an Electrochemical Cell: Theoretical Framework to Simulate Coupled Dynamics of Double Layers and Redox Reactions for Arbitrary Number of Ions <i>Ankur Gupta*, Nathan Jarvey, Filipe Henrique</i>	
#M221, Methods for Data-Driven Modeling of Unsteady Fluid Flows Chairs(s): Peter Baddoo, Room: AT&T 105				
IT - Supervised Learning for Unsteady Quadratic Partial Differential Equations <i>Elizabeth Qian*</i>	Nonlinearity-Free Dynamic Mode Decomposition <i>Benjamin Herrmann*, Peter J. Baddoo, Steven L. Brunton, Beverly J. McKeon</i>	Operator Inference for Non-Intrusive Model Reduction with Nonlinear Manifolds <i>Rudy Geelen*, Stephen Wright, Karen Willcox</i>	Physics-Informed Dynamic Mode Decomposition with Control <i>Peter J. Baddoo*, Benjamin Herrmann, Steven L. Brunton, Beverly J. McKeon</i>	
#M222, Elastic and Elasto-Inertial Turbulence: New Discoveries and Remaining Challenges Chairs(s): Bamin Khomami, Room: Rowling Hall RRH 3.304				
IT - A Review of Elasto inertial Turbulence <i>Yves Dubief*</i>	Exact Coherent State in Purely Elastic Pressure-driven Channel Flow <i>Alexander Morozov*, Martin Lellep, Moritz Linkmann</i>	Tollmien-Schlichting Route to Elastoinertial Turbulence <i>Ashwin Shekar, Richard Hommel, Michael Graham*</i>		
#M224, High-Speed Boundary Layer Transition Chairs(s): Koen Groot, Room: Rowling Hall RRH 3.406				
IT – Analysis of Hypersonic Blunt Bodies Using Input-Output Analysis with a Shock-Kinematic Boundary Condition <i>Joseph Nichols*</i>	Particle Induced Transition for Hypersonic Flows <i>Vincenzo Russo*, Christoph Brehm</i>	Global Receptivity Analysis: Toward Physically Realizable Disturbances in Hypersonic Boundary Layers <i>Omar Kamal*, Matthew Lakebrink, Tim Colonius</i>		

TS 4: TUESDAY MORNING, JUNE 21

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M308, Computational Fracture, Fatigue and Damage Modeling Chairs(s): Trisha Sain, Room: AT&T 116				
<p>IT - Coupled Mechanics from Metastable Phase Transitioning Steels to Shock Absorbing Gels</p> <p><i>Vikas Srivastava*</i></p>	<p>A Damage Mechanics Approach to Fracture of Adhesive Bonded Interfaces</p> <p><i>Bensingh Dhas Pancras*, J N Reddy</i></p>	<p>A Phase-field Fracture Approach to Model Damage and Failure in Fiber-Reinforced Polymer Composites</p> <p><i>Shabnam Konica, Akash Kumar, Trisha Sain*</i></p>	<p>Prediction of Ductile Damage Evolution in Bending Processes Based on Experimental Data Using Artificial Neural Networks</p> <p><i>Jan Gerlach*, Alexander Schowtjak, Waqas Muhammad, Abhijit Brahme, Till Clausmeyer, Kaan Inal, Erman Tekkaya</i></p>	
#M309, Recent Developments in Peridynamics Modeling Chairs(s): Patrick Diehl, Room: Rowling Hall RRH 3.208 (Brazos)				
<p>IT - Some Aspects of Material Stability in Peridynamics</p> <p><i>Stewart Silling*</i></p>	<p>On Neumann-Type Boundary Conditions for Nonlocal Models</p> <p><i>Michael Parks*, Petronela Radu</i></p>	<p>Peridynamics Computations at the Exascale</p> <p><i>Pablo Seleson*, Sam Reeve</i></p>	<p>Simulating Shaped Effect and Damage Using a Peridynamic-Based Discrete Element Method</p> <p><i>Debdeep Bhattacharya*, Robert Lipton</i></p>	
#M312, Micro-Projectile Impact Testing of Emerging Materials Chairs(s): Ramathasan Thevamaran and Jae-Hwang Lee, Room: Rowling Hall RRH 3.414				
<p>Extreme Dynamic Response of Periodic 3D Micro- and Nano-Architected Materials</p> <p><i>Carlos Portela*, Thomas Butruille</i></p>	<p>Microballistic Performance of Carbon Nanotube Mats with Inter-Tube Interfaces Toughened by Polymers</p> <p><i>Jizhe Cai*, Nicholas Jaegersberg, Ramathasan Thevamaran</i></p>	<p>Energy Absorption Spectra and Structural Responses of Nano-Cellular Polymer Coatings upon Supersonic Micro-impact</p> <p><i>Zongling Ren*, Robert Green-Warren, Noah McAllister, Assimina Pelegri, Jonathan P. Singer, Jae-Hwang Lee</i></p>	<p>Improving the Impact Performance of Polymeric Materials by Tuning Molecular Topology</p> <p><i>Sinan Keten*, Andrea Giuntoli, Zhenghao Wu</i></p>	<p>Blowing and Popping: Mechanical Compliance and Toughness of Elastomers Experiencing Impulsive Events</p> <p><i>Katherine Evans*, Andrew Bowman, Yoan Simon, Christopher Soles, Edwin Chan</i></p>
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 4: TUESDAY MORNING, JUNE 21

#M315, New Metamaterial Concepts Chairs(s): Ornella Mattei, Room: AT&T Salon D				
IT - Virtual Loss, Gain and Parity-Time Symmetry for Sound with Complex Frequency Excitations <i>Andrea Alu, Seunghwi Kim*</i>	The Electromomentum Effect in Piezoelectric Willis Media <i>Gal Shmuel*, René Pernas-Salomón, Alan Muhafra, Majd Kosta, Daniel Torrent, Michael R. Haberman, Andrew N. Norris</i>	Electro-momentum Coupled Scatterers <i>Matthew A. Casali, Samuel P. Wallen, Benjamin M. Goldsberry, Michael R. Haberman*</i>	Scattering of Mechanical Waves from the Perspective of Open Systems and Feshbach Projection Operators <i>Hossein Khodavirdi*, Amir Ashkan Mokhtari, Ankit Srivastava</i>	
#M324, Mechanics of Soft Matter: From Living Systems to Functional Composites Chairs(s): Renee Zhao, Room: AT&T 101				
IT - Multimaterial Functional Structures by Grayscale Digital Light Processing 3D Printing <i>H. Jerry Qi*</i>	Electronics-Free Control of the Trajectory of Soft Robots Using Responsive Composites <i>Qiguang He, Rui Yin, Weijian Jiao, Chengyang Mo, Yucong Hua, Hang Shu, Jordan Raney*</i>	Constitutive Modeling of Visco-Hyperelasticity of the Photocured Polymers <i>Yuhai Xiang*, Cody Schilling, Nitesh Arora, AJ Boydston, Stephan Rudykh</i>	Combining Analytical Homogenisation Schemes and Soft Tissue Mechanics: A Multiscale Framework for Skeletal Muscle Tissue <i>Christian Bleiler*, Pedro Ponte Castañeda, Oliver Röhrle</i>	
#M328, Mechanics of Flexible, Stretchable and Bio-integrated Electronics Chairs(s): Nanshu Lu, Room: Rowling Hall RRH 4.308				
IT - Mechanics of Next-Generation Bioelectronics and Wearable Devices <i>Xuanhe Zhao*</i>	Shape-morphing Curved Kirigami for Nondestructive Grasping and Dynamically Conformable Heaters <i>Yaoye Hong, Yinding Chi, Shuang Wu, Yanbin Li, Yong Zhu, Jie Yin*</i>	Ring Origami for Foldable and Wearable Electronics <i>Sophie Leanza*, Shuai Wu, Qiji Ze, Renee Zhao</i>	Graphene E-Tattoos for Ambulatory Electrodermal Activity Sensing Enabled by Heterogenous Serpentine Ribbons <i>Hongwoo Jang, Eunbin Kim, Sangjun Kim, Xiangxing Yang, Seungmin Kang, Kyoung-Ho Ha, Rebecca Wang, Yifan Rao, Nanshu Lu, Zheliang Wang*</i>	
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 4: TUESDAY MORNING, JUNE 21

#M334, Trustworthy Augmented Intelligence and Data-driven Material Modeling Chairs(s): Nikolaos Bouklas, Room: AT&T 106				
Reduced Order Models Using Non-local Calculus on Unstructured Weighted Graphs <i>Siddhartha Srivastava*, Matthew Duschenes, Elizabeth Livingston, Krishna Garikipati</i>	Multiscale Modeling with Operator-Learning Neural Networks <i>Minglang Yin*, Enrui Zhang, Yue Yu, George Karniadakis</i>	Deep Reinforcement Learning Enabled Design-of-Experiments for Path-Dependent Solids with Live Decision Making <i>Qing Yin*, Jarett Poliner, WaiChing Sun</i>	NNFE Simulation of Anisotropic Material Models for Organ Level Simulations of the Aortic Heart Valve <i>Shruti Motiwale*, Christian Goodbrake, Wenbo Zhang, Michael Sacks</i>	
#M335, Instabilities in Solids and Structures Chairs(s): Wen Luo, Room: AT&T 201				
Hexagonal Ring Origami – Foldable and Deployable Functional Assemblies with Significant Packing Ratio <i>Sophie Leanza*, Shuai Wu, Jize Dai, Renee Zhao</i>	Machine Learning-aided Inverse Design of Programmable Soft Kirigami Composite <i>Leixin Ma*, Mohammad Khalid Jawed, Mrunmayi Mungekar, Vwani Roychowdhury</i>	Generalized Continuum Media Confronted to Long and Short Wavelength Instabilities in Architected Materials <i>Christelle Combescure*</i>	Microscopic and Macroscopic Instabilities in Elastomeric Foams <i>Shengzhi Luan*, Stavros Gaitanaros</i>	Rate-dependent Wrinkling and Subsequent Bifurcations of an Elastic Thin Film on a Viscoelastic Layer <i>Soham Mane*, Rui Huang</i>

TS 5: TUESDAY AFTERNOON, JUNE 21

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M103, Data-driven Approaches for Multiscale and/or Multiphysics Systems Chairs(s): Hongyi Xu, Room: AT&T 301				
IT - Integrating Experiments, Simulations, and Machine Learning for Accelerating Mechanical Characterisation at Small Scales <i>Christos Athanasiou*, Xing Liu, Brian Sheldon, Huajian Gao</i>	Deep Learning in Concurrent Multiscale Structural Optimization <i>Nolan Black*, Ahmad R. Najafi</i>	Multi-Deep Learning Framework for Generating Stochastic Representative Volume Elements of Ceramics Matrix Composite <i>Mohamed Hamza*, Khaled Khafagy, Aditi Chattopadhyay</i>		
#M205, Biofluid Mechanics in Thrombosis and Hemostasis Chairs(s): Z. Leonardo Liu, David Bark, George Karniadakis, David Ku, Room: AT&T 202				
IT - Modeling Red Blood Cell Retention in Contracting Blood Clot <i>Alexander Alexeev*, Yueyi Sun, David Myers, Wilbur Lam</i>	Computational Analysis of Effects of Clot Length on Acute Ischemic Stroke Recanalization through Cyclic Aspiration <i>Priyanka Patki*, Jose Monclova, Scott Simon, Keefe Manning, Francesco Costanzo</i>	Multiphase Modeling of Clot Formation in Aneurysms and Patient-Specific Left Atrial Appendages <i>Anass Bouchnita*, Aleksey Belyaev, Vitaly Volpert</i>	An Immersed Boundary Model of Aortic Valve Thrombosis with Biochemical Interactions <i>Aaron Barrett*, Jordan Brown, Aaron Fogelson, Boyce Griffith</i>	
#M207, Microswimming in Newtonian and Complex Fluid Environments Chairs(s): Gwynn Elfring, Room: AT&T Salon E				
IT - Emergent Properties of Flagellar Waveforms in Viscoelastic Fluids <i>Becca Thomases*, Kathryn Link, Robert Guy</i>	Efficient Analysis of a Multi-filament Model of the Ciliary Axoneme that Beats under Steady Dynein Forces <i>Louis Woodhams*, Philip Bayly</i>	Microhydrodynamics of Arbitrary Spheroids in Linear and Quadratic Flows of Shear Thinning Fluids <i>Vishal Anand*, Vivek Narsimhan</i>		
#M211, Rheology and Interfaces in Complex Fluids Chairs(s): Patrick Anderson, Room: AT&T 116				
ElastoViscoplastic Behaviour of Model Near-2D Colloidal Interfaces <i>Alexandra Aliche, T. Tervoot, Jan Vermant*</i>	The Effective Shear and Dilatational Viscosities of a Particle-Laden Interface in the Dilute Limit <i>Michael Eigenbrod, Steffen Hardt*</i>	Instability and Rupture of Thin Bilayer Films Laden with Soluble Surfactant <i>Shu Yang*, Satish Kumar, Cari Dutcher</i>	Mechanistic Insight into Decrease in Lung Surfactant Modulus as Acute Respiratory Distress Progresses <i>Clara Ciutara*, Sourav Barman, Steven Iasella, Joseph Zasadzinski</i>	Relating Interfacial Morphology and Rheology of Curved Lung Surfactant Monolayers <i>Steven Iasella*, Sourav Barman, Clara Ciutara, Joseph Zasadzinski</i>

TS 5: TUESDAY AFTERNOON, JUNE 21

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M214, Electrokinetics for Nano and Microfluidics Chairs(s): Ankur Gupta, Room: AT&T 203				
IT - Helical Propulsion of Anisotropic Particles in Electric Field <i>Bhuvnesh Bharti*</i>	Ionic Conductivity of Cavity-Doped Polyelectrolyte Hydrogels <i>Reghan J. Hill*</i>	Nonlinear Electrophoresis of Microparticles in Newtonian Buffer Solutions <i>Joseph Bentor*, Xiangchun Xuan</i>	Nonlinear Electrokinetic Effects on Dynamics and Rheology of Concentrated Suspensions of Conductive Particles in Shear Flow <i>Siamak Mirfendereski*, Jae Sung Park</i>	Electric Field Driven Co-Assembly and Transport of Active and Passive Colloids <i>Brishty Deb Choudhury, Bhuvnesh Bharti*</i>
#M221, Methods for Data-Driven Modeling of Unsteady Fluid Flows Chairs(s): Benjamin Herrmann, Room: AT&T 105				
IT - Time-Delay Embedding and Space-Time POD <i>Aaron Towne*, Peter Frame</i>		Analysis of the Sensitivity of Nonlinear Flows to Subharmonic Perturbations via the Harmonic Resolvent <i>Alberto Padovan*, Clarence Rowley</i>	Stochastic SPOD-Based Models for Broadband Turbulent Flows <i>Tianyi Chu*, Oliver T. Schmidt</i>	
#M309, Recent Developments in Peridynamics Modeling Chairs(s): Pablo Seleson, Room: Rowling Hall RRH 3.208 (Brazos)				
IT - On Nonlocal Cohesive Continuum Mechanics and Cohesive Peridynamic Modeling of Inelastic Fracture <i>Shaofan LI*</i>		Coupling Approaches for Classical Linear Elasticity and Bond-Based Peridynamic Models <i>Patrick Diehl*, Serge Prudhomme</i>	Four Mutual Properties of Classical and Nonlocal Wave Equations <i>Burak Aksoylu*</i>	A Comparison Study of Peridynamic Bond-Associated Correspondence Material Models <i>WaiLam Chan*, Hailong Chen</i>
#M312, Micro-Projectile Impact Testing of Emerging Materials Chairs(s): Sinan Keten and Jae-Hwang Lee, Room: Rowling Hall RRH 3.414				
Investigation of Dynamic Impact Response of PMMA-Graphene Layered Nanocomposites Using Molecular Dynamics Simulations <i>Zhangke Yang*, Cho-Chun Chiang, Zhaoxu Meng</i>	Large-Scale Atomistic Simulations of Projectile Impact of Block Copolymer Thin Films <i>Andrew Bowman*, Michael Roth, Edwin Chan, John Newman</i>	Angled Supersonic Collisions for Rheological Analysis of Ultrahigh-Rate Tribological Nonlinear Characteristics of Block-Copolymer Microparticles <i>Ara Kim*, Sinan Müftü, Edwin Thomas, Jae-Hwang Lee</i>	The Nanostructural Evolution of Single Crystal Silver Substrates Through Microprojectile Impact <i>Claire Griesbach*, Jizhe Cai, Ramathasan Thevamaran</i>	Physically Based Constitutive Modeling of Metals: from Quasistatic to Ultra High-Rate Deformation <i>Qi Tang*, Mostafa Hassani</i>

TS 5: TUESDAY AFTERNOON, JUNE 21

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M315, New Metamaterial Concepts Chairs(s): Gal Shmuel, Room: AT&T Salon D				
Mechanics of Dual Lattices: An Explicative Perspective through the Lens of Interface Stitching Operations <i>Stefano Gonella*</i>	Multiple Scattering Analysis of Quasi-periodic Clusters of Scatterers <i>Daniel Torrent*, Marc Marti-Sabaté</i>	Experimental Validation of Effective Phononic Crystals for Controlling Cylindrical Torsional Waves <i>Ignacio Arretche*, Kathryn Matlack</i>	Thermo-mechanical Model of Second-graded Porous Materials: A Higher-order Homogenization Approach <i>Bozo Vazic*, Pania Newell</i>	
#M316, Mechanics of Architected Materials Chairs(s): Carlos Portella, Room: AT&T 204				
IT - Additive Manufacturing of Architected and Functional Materials <i>Christopher Spadaccini*</i>	Nanoarchitected Mechanical Metamaterials <i>Jens Bauer*, Cameron Crook, Lorenzo Valdevit</i>	Postbuckling Behavior and Imperfection Insensitivity of Plate Lattice Materials <i>Andrew Gross*, Fani Derveni, Kara Peterman, Simos Gerasimidis</i>	Chirality in Topologically Interlocked Material Systems <i>Dong Young Kim*</i>	
#M324, Mechanics of Soft Matter: From Living Systems to Functional Composites Chairs(s): Shuai Wu, Jerry Qi, Room: AT&T 101				
IT - In-Situ Experimental Observations on Elastomers: Cavitation, Fracture Nucleation and Propagation <i>Jinlong Guo*, Krishnaswamy Ravi-Chandar</i>	Understanding the Rate-Dependence and Inelasticity of Collagen Fibrils: A Viscoelastic-plastic Constitutive Model <i>Fernanda Fontenele*, Nikolaos Bouklas</i>	Stress Distribution Around a Circular Hole in Two-Fiber Reinforced Materials <i>Manoj Myneni*, Chandler Benjamin, Rajagopal Kumbakonam</i>	Constitutive Relation for Human Brain Tissue that Maximizes Tension-compression Asymmetry Subject to B-E Inequalities <i>Durga Prasad, Krishna Kannan*</i>	
#M327, Mechanics of Polymeric Gels Chairs(s): Noy Cohen, Shawn Chester, Room: Rowling Hall RRH 3.304				
Effects of Network Structures on the Fracture of Hydrogel <i>Chenghai Li*, Zhijian Wang, Yang Wang, Qiguang He, Rong Long, Shengqiang Cai</i>	New Insights on the Viscoelastic Behavior of Polymeric Gels <i>Nikola Bosnjak, Shawn Cheser*</i>	Polyelectrolyte Gels: A Coupled Electro-chemo-mechanical Theory and Application to Chemical Stimuli-driven Swelling <i>Sooraj Narayan*, Lallit Anand</i>	Ab initio Discrete Numerical Modeling of Gels for Predictive Design <i>Robert Wagner*, Jinyue Dai, Xinfu Su, Franck Vermerey</i>	
01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM

TS 5: TUESDAY AFTERNOON, JUNE 21

#M328, Mechanics of Flexible, Stretchable and Bio-integrated Electronics Chairs(s): Nanshu Lu, Room: Rowling Hall RRH 4.308				
IT - Liquid Metals for Stretchable and Soft Electronics <i>Michael Dickey*</i>	Mechanical Reliability of Hermetic Encapsulation Materials for Flexible and Stretchable Bioelectronic Implants <i>Kyungjin Kim*</i>	An Unobstructive Hand Band with a Stretchable Magnetic Backplane for High-power Wireless Charging <i>Sangjun Kim*, Jonathan Wells, Nathan Lazarus, Nanshu Lu</i>	Stress-Strain and Resistance-Strain Hysteresis in Single-Wall Carbon Nanotube Films for Stretchable Battery Electrodes <i>Shaswat Mohanty*, Oleg A. Kuznetsov, Avetik R. Harutyunyan, Wei Cai</i>	
#M334, Trustworthy Augmented Intelligence and Data-driven Material Modeling Chairs(s): WaiChing Sun, Room: AT&T 106				
Surrogates of Crystal Plasticity Models Using Self-Consistent Recurrent Neural Networks <i>Colin Bonatti*, Bekim Berisha, Dirk Mohr</i>	Neural Network Finite Element Simulation of Myocardium and the Heart <i>Wenbo Zhang, Tan Bui-Thanh, Michael Sacks*</i>	Bayesian Neural Networks for Weak Solution of PDEs with Uncertainty Quantification <i>Xiaoxuan Zhang*, Krishna Garikipati</i>	Data-Driven Material Modeling Employing the Theory of Representations for Tensor Functions <i>Jan Niklas Fuhg*, Dory Peters, Nikolaos Bouklas</i>	
#M335, Instabilities in Solids and Structures Chairs(s): Kelin Chen, Room: AT&T 201				
Effect of Lüders Banding on Bending and Reverse Bending of Tubes <i>Weihan Zhang*, Stelios Kyriakides</i>	Formation and Propagation of Buckles during Coiling of Cylindrical Thin Shells with Thickness Discontinuities <i>Wen Luo*, Sergio Pellegrino</i>	Crumple Dynamics: Interactions, Patterns, and Mediation of Global Deformation <i>Eduardo Vitral*, Robert Hutton, Sam Riddle, Tian Yu, Eugenio Hamm, James Hanna</i>	Surface-driven, Elastocapillary Instabilities in Soft Materials <i>Berkin Dortdivanlioglu*</i>	Stochastic Analysis of Buckling Load of Beams on Elastic Foundation <i>Zheren Baizhikova*, Jia-Liang Le, Roberto Ballarini</i>

TS 6: TUESDAY EVENING, JUNE 21

03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM
#M203, External Biofluid Mechanics Chairs(s): Sunny Jung, Room: AT&T Salon E				
IT - Evidence of Vision-Based Mechanisms for Cohesive Collective Motions in Hemigrammus Rhodostomus <i>Benjamin THRIIA*, Baptiste Lafoux, Ramiro Godoy-Diana</i>		IT - Impact of the Geometry of Cross-Sectional Profile of Textured Surfaces on the Response of External and Internal Flows <i>Shabnam Raayat*</i>		
#M211, Rheology and Interfaces in Complex Fluids Chairs(s): Jan Vermant, Room: AT&T 116				
Constitutive Framework for Rheologically Complex Interfaces with an Application to Elastoviscoplasticity <i>Patrick Anderson*, Mick Carrozza, Markus Hutter, Martien Hulsen</i>	Numerical Investigation of the Effect of Surface Viscosity on Droplet Breakup and Relaxation Under Extensional Flow <i>Vivek Narsimhan*, Natasha Singh</i>	Direct Simulation and Rheological Analysis of High-Density Foam Flow <i>Ardalan Javadi*, Cyrus Aidun</i>	Molecular Dynamics Simulations of Hydrophilic-Hydrophobic Diblock Copolymer Assemblies in Shear Flow: Effect of Concentration, Composition, and Temperature <i>Radhakrishna Sureshkumar*, Senyuan Liu</i>	
#M214, Electrokinetics for Nano and Microfluidics Chairs(s): Henry Chu, Room: AT&T 203				
IT - Making Steady Fields with Oscillating Potentials: Implications of Asymmetric Rectified Electric Fields (AREFs) for Microfluidics <i>William Ristenpart*</i>		A Thin Double Layer Analysis of Asymmetric Rectified Electric Fields (AREFs) <i>Bhavya Balu, Aditya Khair*</i>	The Transmission Line Model for Porous Electrode Charging <i>Mathijs Janssen*, Timur Aslyamov</i>	Charging Dynamics of Electrochemical Capacitors <i>Ankur Gupta*, Filipe Henrique, Pawel Zuk, Nathan Jarvey</i>
#M216, Reacting Flows Chairs(s): Irfan Khan, Room: AT&T 202				
Computational Methods for Turbulent Reacting Flows in the Limit of High Schmidt Number <i>Aziz Ilgun*, Rodney Fox, Alberto Passalacqua</i>	Hydrogen/Air Premixed Swirling Flame Combustion Simulations <i>Gan Xiao*, Paul Palies</i>	The Hydrodynamics of Mixing Limited Competitive-Consecutive Reactions in a Co-Axial Jet with Disparate Viscosity <i>Mustafa Usta*, Gokul Pathikonda, Bo Zhang, Michael Ahmad, Irfan Khan, Devesh Ranjan, Cyrus Aidun</i>	Chemically Reacting Turbulent Mixing in Coaxial Miscible Liquid Jets <i>Bo Zhang*, Mustafa Usta, Irfan Khan, Devesh Ranjan, Cyrus Aidun</i>	

TS 6: TUESDAY EVENING, JUNE 21

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#M221, Methods for Data-Driven Modeling of Unsteady Fluid Flows Chairs(s): Richard Semaan, Room: AT&T 105				
IT - Parameter Exploration of Cross-Flow Turbines Under Advanced Control Strategies <i>Isabel Scherl*, Brian Polagye, Steven Brunton</i>	Active Flow Control of a Covert-Inspired Deployable Flap Strategy Using Reinforcement Learning <i>Nirmal Jayaprasad Nair*, Andres Goza</i>	Data-Driven Dimensional Analysis of Flapper Valve Closing Angular Velocities in Unsteady Flow <i>Allan Zhong, Junmei Zhang, Hadi Arabnejad*</i>	Physical Interpretations and Comparisons from Modal Analyses of Shock-Separated Flows <i>Hannah Neuenhoff*, Jared Callahan, Pino Martin, Steve Brunton</i>	

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#M225 Turbulence in Compressible Flows: Recent Advances and Open Questions Chair(s): Alexei Kritsuk, Room: AT&T 201					
Flow-thermodynamic Interactions in Compressible Flows <i>Sharath Girimaji*, Bajrang Sharma</i>	Energy Transfer in Isothermal Compressible Turbulence <i>Alexei Kritsuk*</i>	Energy Exchange between Solenoidal and Dilatational Motions in Compressible Isotropic Turbulence <i>Hang Song*, Aditya Ghate, Sanjiva Lele</i>	Measurement of the Scaling Exponents for Compressible Turbulence <i>Gregory Bewley*, Naoki Manzano Miura, Hazel Rivera-Rosario, Steven Dai</i>	Understanding Compressible Turbulence Using Massive Direct Numerical Simulations: What We Have Learned and What's Ahead <i>Diego Donzis*, K.R. Sreenivasan, J. Panickacheril John</i>	Compressible Reacting Turbulence in Chemical and Astrophysical Systems <i>Alexei Poludnenko, Sai Sandeep Dammati*</i>

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#M301, Mechanics of Electrochemical Materials and Systems Chairs(s): Siva Nadimpalli and Scott Roberts, Room: AT&T 301				
Fracture Behavior of Metallic Lithium and Sodium and Implications for Battery Applications <i>Matt Pharr*, Cole Fincher, Jungho Shin</i>	Inelastic Deformation Mechanisms in Ceramic and Glass Electrolytes <i>Christos Athanasiou, Xing Liu*, John Lewis, Matthew McDowell, Huajian Gao, Brian Sheldon</i>	Experimental Method to characterize the Polymer Binder/Active Material Interface Failure Behavior for High Energy Density Electrodes <i>Akshay Pakhare*, Siva Nadimpalli</i>	Deflection and Arrest of Metal Dendrites: Using Engineered Stresses to Prevent Short-Circuit Failures in Solid Electrolytes <i>Cole Fincher*, Brian Sheldon, Craig Carter, Yet-Ming Chiang</i>	

TS 6: TUESDAY EVENING, JUNE 21

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#M316, Mechanics of Architected Materials Chairs(s): Paolo Celli, Room: AT&T 204				
Using Prestress to Control Mechanical Properties in Nanoarchitected Materials <i>Lucas Meza*, Caelan Wisont, Robert Verdoes, Matt Leahy</i>	Pushing and Pulling on Ropes: Energy Dissipation and Reconfiguration in Hierarchical Woven and Knotted Lattices <i>Widianto Moestopo*, Julia Greer</i>	On-Demand Spatial Programmability of Elastic Meta-Materials <i>Tian Chen*</i>		
#M324, Mechanics of Soft Matter: From Living Systems to Functional Composites Chairs(s): Jerry Qi, Room: AT&T 101				
IT - Snail Epiphragm Inspired, Fast and Reversible Wound Dressing Adhesives <i>Shu Yang*, Mingtao Chen, Yue Wu, Alexander Tucker, Anand Jagota</i>	Evolutionary Algorithm Guided Design Strategy for Functional Hard-Magnetic Soft Active Material Printing <i>Shuai Wu*, Craig Hamel, H. Jerry Qi, Renee Zhao</i>	Imaging-Driven Modeling of Dissection Progression in the Aorta <i>Minglang Yin*, Cristina Cavinato, Jay Humphrey, George Karniadakis</i>	Highly Robust and Power-free Soft Biohybrid Mechanoluminescence <i>Chenghai Li*, Qiguang He, Yang Wang, Zhijian Wang, Zijun Wang, Raja Annapooranan, Michael Latz, Shengqiang Cai</i>	
#M327, Mechanics of Polymeric Gels Chairs(s): Shawn Chester, Noy Cohen, Room: Rowling Hall RRH 3.304				
Swelling of Biopolymer Networks with Hydrogen-Bond-Based Cross-Links <i>Noy Cohen*, Claus Eisenbach, Michal Levin</i>	Fibrous Gels Modeled as Fluid Filled Continua with Double-Well Energy Landscape <i>Chuanpeng Sun, Irina Chernysh, John Weisel, Prashant Purohit*</i>	Phase Separation of Hydrogels <i>Yu Zhou, Lihua Jin*</i>	Macroscopic and Microscopic Investigation of Deposition Processes and Polystyrene Particle and Bacteria Attachment to PEG Hydrogels <i>Aleksandr Leontev*, Viatcheslav Freger</i>	
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TS 6: TUESDAY EVENING, JUNE 21

#M328, Mechanics of Flexible, Stretchable and Bio-integrated Electronics Chairs(s): Nanshu Lu, Room: Rowling Hall RRH 4.308				
<p>IT - Active Control of Adhesion in Soft Devices via Subsurface Stiffness and Pressure Modulation</p> <p><i>Kevin Turner*</i></p>	<p>IT - Bio-inspired Soft Suction Cups Under-water</p> <p><i>Yue Wang, Zhengwei Li, Mohamed Elhebeary, René Hensel, Eduard Arzt, M Taher Saif*</i></p>	<p>Biaxially Stretchable and Self-Sensing Textile Heater Using Silver Nanowire Composite</p> <p><i>Shuang Wu*, Zheng Cui, Gregory Baker, Siddarth Mahendran, Ziyang Xie, Yong Zhu</i></p>		
#M333, Cell Mechanics and Mechanobiology Chairs(s): Shiva Rudraraju, Room: Rowling Hall RRH 3.216 (Comal)				
<p>IT - Mechanochemical Phenomena on Biological Membranes – Modeling Instabilities and Phase Transformations Using Kirchhoff-Love Shell Kinematics</p> <p><i>Rahul Gulati, Debabrata Auddya, Xiaoxuan Zhang, Krishna Garikipati, Padmini Rangamani, Shiva Rudraraju*</i></p>	<p>On the Mechanics of Endo/Exocytosis: Implications for Virus Progeny and Nanomedicine</p> <p><i>Mattia Bacca*</i></p>	<p>Computational Modeling and Simulation of Epithelial Wound Healing</p> <p><i>Xiaowei Zeng*, Jie Bai</i></p>	<p>The Mechanics of Cephalic Furrow Formation in the <i>Drosophila</i> Embryo Investigated Using an Advanced Vertex Model</p> <p><i>Redowan Ahmed Niloy*, Michael Holcomb, Jeffrey H. Thomas, Jerzy Blawdziewicz</i></p>	
#M334, Trustworthy Augmented Intelligence and Data-driven Material Modeling Chairs(s): Krishna Garikipati, Room: AT&T 106				
<p>Graph Embedding Plasticity for Solids with Complex Microstructures</p> <p><i>Nikolaos Vlassis, WaiChing Sun*</i></p>	<p>Multiscale Mechanical Properties of Mancos Shale Using Machine Learning Methods</p> <p><i>Hongkyu Yoon*, Teeratorn Kadeethum</i></p>	<p>Manifold Embedding Model-free Elasticity</p> <p><i>Bahador Bahmani*, WaiChing Sun</i></p>	<p>Data-driven Modeling of Thermal History for Directed Energy Deposition</p> <p><i>Vignesh Perumal*, Diab Abbueidda, Seid Koric, Antonios Kotsos</i></p>	<p>Variational Onsager Neural Networks (VONNs): A Thermodynamics-Based Variational Learning Strategy for Non-Equilibrium Material Modeling</p> <p><i>Shenglin Huang*, Zequn He, Bryan Chem, Celia Reina</i></p>

Wednesday, June 22

TS 7: WEDNESDAY MORNING, JUNE 22

Plenary Speaker

Jackie Chen

Mitigating Climate Change Through Ammonia-Hydrogen Premixed Turbulent Combustion

8:30 – 9:45 AM

Room: AT&T 204; Chair: Eric Shaqfeh

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#M111, Statistical Physics Techniques in Computational Mechanics Chairs(s): Steve Fitzgerald, Room: AT&T Salon D				
<p>IT - Uncertainty-Quantification-Driven Calculation of Long-Time Properties from Atomistic Simulations</p> <p><i>Danny Perez*, Thomas Swinburne</i></p>	<p>Diffusive Molecular Dynamics Simulations of Long-Term Mass Transport with Atomistic Resolution</p> <p><i>Xingsheng Sun*, Kevin Wang, Pilar Ariza, Michael Ortiz</i></p>	<p>Predicting the Unobserved: A Statistical Mechanics Framework for Non-Equilibrium Material Response with Quantified Uncertainty</p> <p><i>Shenglin Huang*, Ian Graham, Robert Riggleman, Paulo Arratia, Steve Fitzgerald, Celia Reina</i></p>	<p>Objective Molecular Dynamics: An Atomistic Analogue of Exact Solutions of Continuum Mechanics</p> <p><i>Gunjan Pahlani*, Richard James</i></p>	
#M203, External Biofluid Mechanics Chairs(s): Shabnam Raayai-Ardakani,, Room: AT&T Salon E				
<p>IT - Effect of Seal Whisker Wavelength on the Shedding Frequency and Force Reduction</p> <p><i>Kirby Heck, Trevor Dunt, Kathleen Lyons, Jennifer Franck*</i></p>	<p>Bat Drinking on the Wing</p> <p><i>Sunghwan Jung*, Abhradeep Maitra, Seongjin Kim, Rolf Mueller, Jane Wang</i></p>	<p>IT - Aerodynamics of Active and Passive Dispersal of Miniature Insects with Bristled Wings</p> <p><i>Vishwa Kasoju, Mitchell Ford, Ethaniel Tobar, Arvind Santhanakrishnan*</i></p>		
#M211, Rheology and Interfaces in Complex Fluids Chairs(s): Patrick Anderson / Jan Vermant, Room: AT&T 116				
<p>Unveiling Relaxation Dynamics in Polymer Networks with Dynamic Bonds</p> <p><i>Ran Tao*, Neil Dolinski, Anthony Kotula, Joseph Dennis, Stuart Rowan, Aaron Forster</i></p>	<p>On Some Analogies between Viscous Interfaces and Elastic Dislocations</p> <p><i>Priti Panda*, Puneeth Shekar, Puli SaiKiran, Harish Dhami, Koushik Viswanathan</i></p>	<p>Application of the Gram–Schmidt Factorization of the Deformation Gradient to a Cone and Plate Rheometer</p> <p><i>Sandipan Paul, Alan Freed, Chandler Benjamin*</i></p>		
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 7: WEDNESDAY MORNING, JUNE 22

#M216, Reacting Flows Chairs(s): Irfan Khan, Room: AT&T 202				
Mechanism Reduction Aided by ML for Reactive Flow Simulations <i>Aaron Nelson*, Rohit Mishra, Dorrin Jarrahbashi</i>	Reactive CFD to Understand and Optimize Mixing in an Annular Reactor <i>Lihui Wang*, Thomas Farmer, Quan Yuan</i>			
#M218, Mechanics and Dynamics of Porous-particle Suspensions Chairs(s): Patrick D. Anderson, Room: AT&T 203				
IT - Using Microgels to Design Glasses and Gels with Tailored Properties <i>Michel Cloitre*</i>	Slip-stick Transitions of Soft Permeable Particles Near a Rigid Wall <i>Monica E. A. Zakhari*, Roger Bonnecaze</i>	Boundary Conditions at the Fluid-Hydrogel Interface <i>Yuan Young*, James Feng, Pengtao Yue, Zelai Xu, Jiaqi Zhang</i>		
#M221, Methods for Data-Driven Modeling of Unsteady Fluid Flows Chairs(s): Aditya Nair, Room: AT&T 105				
IT - Network-Based Perspectives for Unsteady Flow Modeling <i>Aditya Nair*</i>	Sparse Identification of Turbulence Closures Applied to Single Phase and Particle-Laden Flows <i>Sarah Beetham, Jesse Capecelatro*</i>	Ensemble-SINDy: Robust Sparse Model Discovery in the Low-Data, High-Noise Limit, with Active Learning and Control <i>Urban Fasel*, J. Nathan Kutz, Bingni W. Brunton, Steven L. Brunton</i>	Discovering Governing Equations with Deep Delay Autoencoders <i>Joseph Bakarji*, Kathleen Champion, Nathan Kutz, Steven Brunton</i>	
#M225, Turbulence in Compressible Flows: Recent Advances and Open Questions Chairs(s): Diego Donzis, Room: AT&T 201				
Using Learned Dominant Physical Processes with Data-driven Balance Models for Shock-separated Flows <i>Vishal Bhagwandin*, Han Lee, Jared Callahan, Pino Martin, Steve Brunton</i>	Analysis of Screech Tone Generation Using Spatially Weighted SPOD <i>Olivia G. Martin*, Gao Jun Wu, Sanjiva K. Lele</i>	Turbulent Entropy Production in Compressible Flows <i>Ethan Vogel*, Jakob Brisby, James Coder</i>	The Navier-Stokes Equations Do Not Describe the Smallest Scales of Turbulence <i>Ryan M. McMullen*, John R. Torczynski, Michael A. Gallis</i>	Compressible Quantum Turbulence in Ultracold Atoms and Neutron Stars <i>Michael Forbes*, Aurel Bulgac, Gabriel Wlazlowski</i>
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TS 7: WEDNESDAY MORNING, JUNE 22

#M301, Mechanics of Electrochemical Materials and Systems Chairs(s): Claudio Di Leo and Partha Mukherjee, Room: AT&T 301				
<p>Mechanical Behavior of Inorganic Lithium-Conducting Solid Electrolytes</p> <p><i>Shuman Xia*</i></p>	<p>In situ Transmission Electron Microscopy Characterization of Crack Propagation and lithium Penetration in Solid State Electrolyte</p> <p><i>Akihiro Kushima*</i></p>	<p>Sodium Metal Mechanics: Temperature and Grain-rotation Effects on Plasticity and Creep</p> <p><i>William LePage*, Y. Chen, A. Poli, M.D. Thouless, N. Dasgupta</i></p>	<p>Safety Issue Analysis and Risk Evaluation of Defective Lithium-ion Batteries Based on Multiphysics Model and Data-Driven</p> <p><i>Yikai Jia*, Jun Xu</i></p>	<p>A Thermodynamically Consistent Gradient Theory For Reaction-Diffusion-Damage in Solids: Application to Metal Filament Growth in Solid-State Batteries</p> <p><i>Donald Bistri*, Claudio Di Leo</i></p>
#M316, Mechanics of Architected Materials Chairs(s): Lorenzo Valdevit, Room: AT&T 204				
<p>IT - Nonlinear Wave Propagation from Periodic Arrangements of Rough Contact Interfaces</p> <p><i>Kathryn Matlack*, Ganesh Patil</i></p>	<p>Three-dimensional Printing of High-sensitivity Micro-Architected Piezoelectric Hydrophone with Designed Beam Pattern</p> <p><i>Haotian Lu, Victor Couedel*, Huachen Cui, Rayne Zheng</i></p>	<p>Harnessing Topological Mechanics of Maxwell Lattices to Realize Stress-Focusing Metamaterials</p> <p><i>Caleb Widstrand*, Harold Liu, Joseph Labuz, Xiaoming Mao, Stefano Gonella</i></p>	<p>Untethered Control of Functional Origami Robots with Distributed Actuation for Multimodal Deformation</p> <p><i>Shuai Wu*, Qiji Ze, Renee Zhao</i></p>	
#M320, Mechanics and Physics of Active Materials Chairs(s): Theocharis Baxevanis, Room: Rowling Hall RRH 3.208 (Brazos)				
<p>IT - A New Approach to Constitutive Models for SMAs and Application to Thermomechanical Toughening during Steady Crack Growth</p> <p><i>Chad Landis*, Mohammed Alsawalhi</i></p>	<p>A Constitutive Model for Tailoring the Anisotropic Thermal Expansion Tensor Evolution During Deformation Processing of Shape Memory Alloys</p> <p><i>Mengqian Zhang, Theocharis Baxevanis*</i></p>	<p>Hamilton's Principle for Modeling Shape Memory Alloys</p> <p><i>Philipp Junker, Meike Gierig, Cem Erdogan*</i></p>	<p>A Mesoscale Approach to Modeling the Influence of Local Heterogeneities in Phase Transforming Materials</p> <p><i>Manish Vasoya*, Jobin K. Joy, Dimitris C. Lagoudas</i></p>	
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TS 7: WEDNESDAY MORNING, JUNE 22

#M321, Dynamics of Soft Materials and Structures Chairs(s): Robert Lowe, Room: Rowling Hall RRH 3.414				
IT - Wave Propagation in Poly(Ethylene Glycol) Diacrylate Hydrogels <i>Ke Luo, Kshitiz Upadhyay, Ghatu Subhash, Douglas Spearot*</i>	Observing Dynamic Shear in Soft PDMS <i>Dylan Carberry*, Tal Cohen</i>	Non-Linear Dynamics of a Photo-Cured Thin-Shell Spherical Membrane: Sudden Inflation and Deflation <i>Robert Lowe*, Asma Ul Hosna Meem, Daniel Clemens, Christopher Cooley</i>		
#M323, Soft Matter Mechanics, Physics, and Devices Chairs(s): Qiming Wang, Room: Rowling Hall RRH 3.304				
IT - Self-Strengthening Material Interfaces Inspired from Protein Catch Bonds <i>Sinan Keten*, Kerim Dansuk</i>	From Sea Slugs to Robots: Computation, Discrete Geometry, and Soft Mechanics in Non-Euclidean Elasticity <i>Kenneth Yamamoto*, Shankar Venkataramani</i>	Discovery of Multi-Functional Polyimides through High-Throughput Screening using Explainable Machine Learning <i>Lei Tao*, Jinlong He, Vikas Varshney, Wei Chen, Ying Li</i>		
#M324, Mechanics of Soft Matter: From Living Systems to Functional Composites Chairs(s): Sophie Leanza, Jerry Qi, Room: AT&T 101				
IT - Functionality through Multistability: From Soft Robots to Deployable Structures <i>katia bertoldi*, David Melancon, Benjamin Gorissen</i>	Design of Highly Deformable, Environmentally Responsive, Polyelectrolytes <i>Meredith Silberstein*, Hongyi Cai, Zhongtong Wang, Prathamesh Raiter</i>	Bending Measures for Plates and Shells <i>James Hanna*, Eduardo Vitral</i>	Learning from Nature: Discovering and Designing Bio-inspired Solutions in Soft Matter and Interfaces <i>D. Dini*</i>	
#M328, Mechanics of Flexible, Stretchable and Bio-integrated Electronics Chairs(s): Nanshu Lu, Room: Rowling Hall RRH 4.308				
IT - Organic Haptics: Soft Materials for Artificial Touch <i>Darren Lipomi*</i>	Stretchable Hybrid Response Pressure Sensor Capable of Accurate Pressure Sensing under Large Tensile Strain <i>KyoungHo Ha, Zhengjie Li*, Sangjun Kim, Nanshu Lu</i>	Cyclic and Failure Response of Screen-Printed Stretchable Conductors <i>Kailey Miller, Vahidreza Alizadeh, Joey Mead, Alireza Amirkhizi*</i>	Stretchability of Horseshoe-Shaped Silver Nanowire Composite: Experiments and Modeling <i>Yuxuan Liu*, Shuang Wu, Yong Zhu</i>	
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TS 7: WEDNESDAY MORNING, JUNE 22

#M333, Cell Mechanics and Mechanobiology Chairs(s): Shiva Rudraraju, Room: Rowling Hall RRH 3.216 (Comal)				
Emergence of Order from Randomness in Multi-cellular Systems through Long Range Cell-cell Interactions <i>Umnia Doha, M Taher Saif*</i>	Discovery of Signaling Mechanisms in Cell Migration by Data Driven Variational System Identification <i>Krishna Garikipati*, Siddhartha Srivastava</i>	How Cells Sense and Navigate around Curvatures? <i>Luyi Feng, Hongmei Xue, Sulin Zhang*, Jimmy Hsia</i>	Anisotropy Profoundly Alters Stress Fields within Circularly Shaped Living Cells <i>Habibeh Ashouri, Kristen Billiar, Nima Rahbar*</i>	The Crucial Role of Elasticity in Regulating Liquid-Liquid Phase Separation in Cells <i>Mrityunjay Kothari*, Tal Cohen</i>
#M334, Trustworthy Augmented Intelligence and Data-driven Material Modeling Chairs(s): Nikolaos Bouklas, Room: AT&T 106				
IT - Learning Deep Neural Operators for Heterogeneous Material Modeling <i>Yue Yu*, Huaiqian You, Quinn Zhang, Colton Ross, Chung-Hao Lee</i>	Non-intrusive Reduced-order Models for Parametric Partial Differential Equations via Data-Driven Operator Inference <i>Shane McQuarrie*, Parisa Khodabakhshi, Karen Willcox</i>	Deep Learning for Discovering Mechanistic Models Directly from Data <i>Robert Stephany*, Christopher Earls</i>		

TS 8: WEDNESDAY AFTERNOON, JUNE 22

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#M111, Statistical Physics Techniques in Computational Mechanics Chairs(s): Prashant Purohit, Room: AT&T Salon D				
<p>IT - Mechanistic Insights into Crystalline Interfaces via Thermal Fluctuations</p> <p><i>Yashashree Kulkarni*, Dengke Chen</i></p>	<p>A Stochastic Framework for Evolving Grain Statistics Using a Neural Network Model for Grain Topology Transformations</p> <p><i>Jaekwang Kim*, Nikhil Admal</i></p>	<p>Li_xCoO₂ Phase Stability Studied by Machine Learning-Enabled Scale Bridging Between Electronic Structure, Statistical Mechanics and Phase Field Theories</p> <p><i>Gregory Teichert, Sambit Das, Jamie Holber, Mostafa Shojaei*, Chirranjeevi Gopal, Muratahan Aykol, Vikram Gavini, Krishna Garikipati</i></p>		
#M203, External Biofluid Mechanics Chairs(s): Sunny Jung, Room: AT&T Salon E				
<p>IT - A Mathematical Framework to Calculate Facemasks' Effective Filtration Efficiency in Large Population</p> <p><i>Akshay Anand, Tso-Kang Wang, Tomas Solano, Kouros Sholee*</i></p>	<p>Hydrodynamics and Design Principles of Metachronal Paddling</p> <p><i>Mitchell Ford*, Nicholas Battista, Diego Colón, Arvind Santhanakrishnan</i></p>	<p>IT - On the Impact of Vortex Formation on Particle Trapping in Respiratory Paths</p> <p><i>Saikat Basu*, Leonardo Chamorro, Mark Stremmler</i></p>		
#M213, Modeling and Simulation of Energetic Materials Chairs(s): J. Keith Clutter, Room: AT&T 101				
<p>Bridging Meso- and Macro-Scales Using Machine Learning for Simulations of Shocked Heterogeneous Energetic Materials</p> <p><i>H.S. Udaykumar*, Stephen Baek, Yen Thi Nguyen, Phong Nguyen, Oishik Sen</i></p>	<p>Constitutive Modeling of the Dynamic Response of Polycrystalline High Energetic Systems</p> <p><i>Benoit revil-Baudard*, Oana Cazacu</i></p>	<p>Effect of Void Positioning on the Detonation Sensitivity of a Heterogeneous Energetic Material</p> <p><i>Christopher Coffelt, Daniel Olsen*, Christopher Miller, Min Zhou</i></p>		
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TS 8: WEDNESDAY AFTERNOON, JUNE 22

#M217, Dynamics and Instabilities of Flows with Particles Across Length Scales Chairs(s): Sungyon Lee; Eckart Meiburg, Room: AT&T 202				
IT - Emergent Structure in Magnetic Microrollers <i>Michelle Driscoll*</i>	Instabilities in Two-Dimensional Suspension Flows <i>Rui Luo*, Li Wang, Sungyon Lee</i>	Rayleigh Taylor and Double Diffusive Instabilities from Sediment Settling in a Two-Layer Stably-Stratified Hele-Shaw cell <i>Patrick Bunton*, Megan Foley, Daniel Stump, Gavin Thomas, Eckart Meiburg</i>	Suspension Dynamics: from Accumulation to Fingering <i>Yun Chen, Rui Luo, Li Wang, Sungyon Lee*</i>	
#M221, Methods for Data-Driven Modeling of Unsteady Fluid Flows Chairs(s): Daniel Floryan, Room: AT&T 105				
IT - Aerodynamic Predictions Using Machine Learning <i>Richard Semaan*</i>	Regularization of the Ensemble Kalman Filter for Elliptic Inverse Problems: Application to Potential Flows <i>Mathieu Le Provost*, Ricardo Baptista, Youssef Marzouk, Jeff Eldredge</i>	Comparing Different Nonlinear Dimensionality Reduction Techniques for Data-Driven Unsteady Fluid Flow Modeling <i>Hunor Csala*, Amirhossein Arzani, Scott Dawson</i>	Reduced-Order Modeling and Control of Turbulent Plane Couette Flow with Neural Ordinary Differential Equations and Reinforcement Learning <i>Alec Linot*, Kevin Zeng, Michael Graham</i>	Discovering Spatially Localized and Multiscale Structures in Turbulent Flows <i>Daniel Floryan*, Alex Guo, Michael D. Graham</i>
#M301, Mechanics of Electrochemical Materials and Systems Chairs(s): Shuman Xia and Venkat Subramanian, Room: AT&T 301				
A Thermodynamically Consistent Gradient Theory for Diffusion–Reaction–Deformation in Solids: Application to Conversion-Type Electrodes <i>Claudio Di Leo*, Arman Afshar</i>	Comprehensive Simulation of Intergranular Fracture Behavior Inside Randomly Aggregated LiNixCoyMn1-x-yO2 Polycrystalline Particle <i>Zhansheng Guo*, Hao Tian, Pingyuan Huang, Li Ting Gao</i>	Modeling Chemo-Mechanics with Electrolyte Infiltration to Quantify Degradation of Cathode Particles <i>Jeffery Allen*, Peter Weddle, Ankit Verma, Anudeep Mallarapu, Francois Usseglio-Viretta, Donal Finegan, Andrew Colclasure, Weijie Mai, Volker Schmidt, Orkun Furat, David Diercks, Tanvir Tanim, Kandler Smith</i>		
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TS 8: WEDNESDAY AFTERNOON, JUNE 22

#M310, Plasticity & Ductile Failure Chairs(s): Brian Lester, Room: AT&T 203				
<p>IT - Distortional Plasticity Framework HEXAH for Application to Advanced High Strength Steels</p> <p><i>Baptiste Reyne, Frederic Barlat*</i></p>	<p>Modeling and Simulation of Deformation Caused by Phase Transformation from beta to alpha in Ti-6Al-4V during Processing</p> <p><i>Sagar Bhatt*, Antoinette Maniatty</i></p>	<p>Microstructure Control in Metal Composites Processed by Equal Channel Angular Extrusion</p> <p><i>Charles Borenstein*, Michael Demkowicz</i></p>	<p>Finite Volume Simulation of Additive Friction Stir Deposition for Manufacturing and Repair</p> <p><i>K.C. Kincaid*, D.W. MacPhee, G.G. Stubblefield, T.W. Rushing, J.B. Jordon, P.G. Allison</i></p>	
#M316, Mechanics of Architected Materials Chairs(s): Lorenzo Valdevit, Room: AT&T 204				
<p>Negative Group Velocity State Induced by Deformation in Soft Layered Media</p> <p><i>Nitesh Arora*, Qi Yao, Stephan Rudykh</i></p>	<p>Estimating the Bounds on Anisotropic Elastic Moduli in Two-dimensional Structured Materials</p> <p><i>Jagannadh Boddapati*, Andrew Akerson, Chiara Daraio</i></p>	<p>A Numerical Study on Mechanical Properties of Low-density Fiber Networks</p> <p><i>Soham Mane*, Kenneth Liechti, Rui Huang</i></p>	<p>Exploring the Utility of Asymmetry in Lattice Metamaterials</p> <p><i>Srikar Srivatsa*, Roshan Suresh Kumar, Daniel Selva, Meredith Silberstein</i></p>	<p>Problems of Steady Vibrations in the Coupled Theory of Double Porosity Thermoelastic Materials</p> <p><i>Merab Svanadze*</i></p>
#M320, Mechanics and Physics of Active Materials Chairs(s): Bjoern Kiefer, Room: Rowling Hall RRH 3.208 (Brazos)				
<p>IT - Recent Challenges in Shape Memory Alloys – From Fe-based Systems to Additive Manufacturing</p> <p><i>Thomas Niendorf*</i></p>	<p>Transformation Tuning of Shape Memory Alloys for Thermoelastic Active Regenerators with Giant dT</p> <p><i>Andre Montagnoli*, Takahiro Yamazaki, Marcus Young, Ichiro Takeuchi</i></p>	<p>Evolution of Phase Transformation Induced Deformation in NiTi Tubes Under Isobaric Thermal Cycling: Experiments and Simulation</p> <p><i>Solon Tsimpoukis*, Stelios Kyriakides, Chad M. Landis</i></p>	<p>Processing-Induced Strain Glass States in a Fe-Mn-Al-Cr-Ni Alloy</p> <p><i>Bailey Ashmore*, Marcus L. Young, Anit Giri</i></p>	
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TS 8: WEDNESDAY AFTERNOON, JUNE 22

#M321, Dynamics of Soft Materials and Structures Chairs(s): Christopher Cooley, Room: Rowling Hall RRH 3.414				
Investigation of Thermo-chemo-mechanically Coupled Phenomena in Frontal Polymerization <i>Xuanhe Li*, Tal Cohen</i>	Dynamics of Fire-Ant Collectives <i>Alberto Fernandez-Nieves*, Caleb Anderson</i>	Thermochemomechanically Coupled Cavity Dynamics in Incompressible Solids <i>Chockalingam Senthilnathan*, Tal Cohen</i>	Interesting Nonlinear Frequency Response of Dielectric Elastomer Membranes Excited by Voltages with Fluctuating Amplitude <i>Christopher Cooley*, Robert Lowe</i>	
#M323, Soft Matter Mechanics, Physics, and Devices Chairs(s): Ying Li, Room: Rowling Hall RRH 3.304				
IT - Bridging the Scales in Soft Matter Mechanics: The Transient Network Theory <i>Franck Vernerey*</i>	Estimations of Junctional Fluctuations by a Stochastic Method and Molecular Dynamics Simulation to Review Elasticity of Polymer Networks <i>Weikang Xian*, Amitesh Maiti, Andrew Saab, Ying Li</i>	Sticky Rouse Time Features the Self-Healing of Supramolecular Polymer Networks <i>Zhiqiang Shen, Hulin Ye, Ying Li*, Qiming Wang</i>	The Nonlinear Viscoelastic Response of Suspensions of Vacuous Bubbles in Rubber <i>Oscar Lopez-Pamies, Bhavesh Shirmali*</i>	
#M333, Cell Mechanics and Mechanobiology Chairs(s): Shiva Rudraraju, Room: Rowling Hall RRH 3.216 (Comal)				
IT - Viscoelastic Damage Evaluation of the Axonal Cytoskeleton <i>Fuad Hasan, Ashfaq Adnan*</i>	Modeling and Investigation of Action Potential Propagation along Myelinated Axons <i>Rahul Gulati*, Shiva Rudraraju</i>	Mechanical Threshold of Critical Neural Network Signal Disruption Following Traumatic Brain Injury In Vitro <i>Jamie Sergay*, Luke Summey, Aviad Hai, Christian Franck</i>	Mechanics and Microstructure Underlying Axonal Deformation of Neurons and Neuronal Injury <i>Debabrata Auddya*, Rahul Gulati, Shiva Rudraraju</i>	
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TS 8: WEDNESDAY AFTERNOON, JUNE 22

#M334, Trustworthy Augmented Intelligence and Data-driven Material Modeling

Chairs(s): Waiching Sun, Room: AT&T 106

Topology Optimization Through Machine Learning	Deep Learning Framework for Predicting Stress-Strain Response of Microstructured Materials Deep Learning Framework for Predicting Stress-Strain Response of Microstructured Materials	A Data-Driven Approach to Predict Full-Field Nonlinear Stress Distribution and Crack Path in Fiber-reinforced Composites	Interval and Fuzzy Physics-informed Neural Networks for Uncertain Fields	
<i>Md Imrul Reza Shishir*, Alireza Tabarraei</i>	<i>Haotian Feng*, Pavana Prabhakar</i>	<i>Reza Sepasdar*, Maryam Shakiba</i>	<i>Jan Niklas Fuhg, Ioannis Kalogeris, Amelie Fau, Nikolaos Bouklas*</i>	

TS 9: WEDNESDAY EVENING, JUNE 22

03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM
#M111, Statistical Physics Techniques in Computational Mechanics Chairs(s): Yash Kulkarni, Room: AT&T Salon D				
Emergence of Viscosity and Dissipation via Stochastic Bonds <i>Travis Leadbetter, Ali Seiphoori, Celia Reina, Prashant Purohit*</i>	A Framework for Uncertainty Quantification in Damage Mechanics <i>Gideon Simpson*, Petr Plechac, Jerome Troy, Jarek Knapp</i>	A Mesoscale Model for the Micromechanical Investigation of Transient Polymers <i>Robert Wagner*, Franck Vernerey</i>	Elastic Contact of Random Surfaces with Fractal and Hurst Effects <i>Yaswanth Sai Jetti*, Martin Ostoja-Starzewski</i>	
#M213, Modeling and Simulation of Energetic Materials Chairs(s): Oana Cazacu, Room: AT&T 101				
Phase Field Modeling of Regression Rates and Morphology in Solid Composite Propellants <i>Maycon Meier dos Santos*, Brandon Runnels</i>	Simulations and Experiments of Explosive Particulate Dispersal <i>Bradford Durant, J. Garno, F. Ouellet, K. Hughes, T. Jackson, S. Balachandar*</i>	Modeling Multi-Component Non-Ideal Explosives for Munition Systems Simulation <i>J Keith Clutter*</i>		
#M217, Dynamics and Instabilities of Flows with Particles Across Length Scales Chairs(s): Martin Maxey, Room: AT&T 202				
IT - Microscopic Rearrangements in Highly Polydisperse Sheared Granular Systems <i>Eric Weeks*, Yonglun Jiang, Daniel Sussman</i>	Rheology of Concentrated Suspension of Particles: the Role of Surface Roughness <i>Rishabh More, Arezoo Ardekani*</i>	Viscous Rebound of a Cylindrical Particle on a Solid Wall: The Role of "Apparent Softness and Roughness" <i>Micheline Abbas*, Alicia Aguilar, Matthieu Mercier, Laurent Lacaze</i>		
#M301, Mechanics of Electrochemical Materials and Systems Chairs(s): Matt Pharr and Brian Sheldon, Room: AT&T 301				
Theory of Soft Solid Electrolytes: Overall Properties of Composite Electrolytes, Effect of Deformation and Microstructural Design for Enhanced Ionic Conductivity <i>Kosar Mozaffari*, Liping Liu, Pradeep Sharma</i>	A Diffusion-deformation Model and in situ Stress Measurement for High Performance Li and Na Battery Electrodes <i>Akshay Pakhare*, Shawn Chester, Siva Nadimpalli</i>	A Virtual Multiscale Modeling Chain for Na _x FePO ₄ : Combining 3D Anisotropic Phase-field Modeling and DFT <i>Tao Zhang*, Mohsen Sotoudeh, Axel Groß, Marc Kamlah, Robert McMeeking</i>		

TS 9: WEDNESDAY EVENING, JUNE 22

03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM
#M305, Mechanics-Guided Design, Material Processing and Applications of Composites Chairs(s): Kedar Kirane, Xueju Wang, Room: Rowling Hall RRH 3.406				
Rule of Mixtures for the Mooney-Rivlin Coefficients of Graphene-Based Soft Sandwich Nanocomposites <i>Kedar Kirane*, Mersim Redzematovic</i>	An Auxetic Interpenetrating Phase to Enhance the Confining Pressure in Brittle Matrices <i>Andrew Gross*, Georgios Tzortzinis, Simos Gerasimidis</i>	Transient Topology Optimization for Thermal Design of Microvascular Composites <i>Jonathan Gorman*, Reza Pejman, Ahmad Najafi</i>	Enabling Hierarchical Flexible Syntactic Foams Using Power Based Sintering Process <i>H. R. Tewani*, Meg Hinaus, Pavana Prabhakar</i>	
#M310, Plasticity & Ductile Failure Chairs(s): Yannis Korkolis, Room: AT&T 203				
Ductile Fracture under General Loading Conditions: Theory and Implementation <i>Vigneshwaran Radhakrishnan*, Amine Benzerga</i>	Data-Driven Computational Modeling of Plasticity-Induced Damage Effects <i>Sara Schlenker, Antonios Kontsos*</i>	Physics-informed Machine Learning for Development of Interpretable, Improved Material Damage Models <i>Donovan Birky*, Karl Garbrecht, David Randall, John Emery, Coleman Alleman, Brian Lester, Geoffrey Bomarito, Jacob Hochhalter</i>	Mesh Objectivity in Dynamic Fracture Analyses with the Crack Band Model <i>Taufiq Abdullah*, Kedar Kirane</i>	Integrated Cohesive Zone and J-integral Approaches to Characterizing Indentation-Induced Pillar Fracture Instability <i>Xing Liu*, Christos Athanasiou, Boyu Zhang, Nitin Padture, Jun Lou, Brian Sheldon, Huajian Gao</i>
#M311, Mechanics of Friction, Fracture and Damage in Materials Across Scales Chairs(s): David Kammer, Room: AT&T 201				
IT - Interfaces and Dynamic Brittle Fracture: Peridynamic Models of PMMA <i>Florin Bobaru*, Longzhen Wang</i>	A Microplane-Peridynamic Formulation for the Simulation of Concrete Failure <i>Masoud Behzadinasab, Yuri Bazilevs*, John Foster</i>	Modeling Fracture in Rate-Dependent Polymer Networks: A Quasicontinuum Approach <i>Ahmed Elbanna*, Ahmed Ghareeb</i>	Experimental and Numerical Study of Slip in Fretting Fatigue Contacts through Variations in Load Path and Oxygen Availability <i>Luke E. Blades, RJH Paynter, David Hills*</i>	
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TS 9: WEDNESDAY EVENING, JUNE 22

#M316, Mechanics of Architected Materials Chairs(s): Carlos Portella , Room: AT&T 204				
<p>IT - Magneto-Mechanical Metamaterials for Morphing Mode Branching and Tunable Properties</p> <p><i>Renee Zhao*</i></p>	<p>Structured Fabrics with Tunable Mechanical Properties</p> <p><i>Liuchi Li*, Yifan Wang, Douglas Hofmann, José Andrade, Chiara Daraio</i></p>	<p>In-situ X-ray Computed Tomography to Observe the Micro- and Macro-scale of Architected Vat Photopolymerized Structures</p> <p><i>Orion Kafka*, Callie Higgings, Jason Killgore, Newell Moser, Edward Garboczi</i></p>	<p>Data-Based Techniques for Structure-Property Correlation in Periodic and Aperiodic Metamaterials</p> <p><i>Shengzhi Luan*, Enze Chen, Stavros Gaitanaros</i></p>	
#M320, Mechanics and Physics of Active Materials Chairs(s): Stephan Rudykh, Room: Rowling Hall RRH 3.208 (Brazos)				
<p>Phase-Field Nano- and Scale-Free Approaches to Interaction between Martensitic Phase Transformations and Plasticity</p> <p><i>Valery I. Levitas*</i></p>	<p>A Two-scale Three-dimensional Phase-field Model for Austenite-Martensite Interfaces in Shape Memory Alloys</p> <p><i>Chi Hou Lei*, Yunya Liu</i></p>	<p>A Finite-strain Phase-field Model for Fracture in Shape Memory Alloys: Modelling Framework and Experimental Validation</p> <p><i>Theocharis Baxevanis, Md Mehedi Hasan*</i></p>	<p>Numerical Studies on a Coupled Phase Field Model for Crack Propagation and Martensitic Transformation under Mechanical and Thermal Loadings</p> <p><i>Daniel Juhre*, Ehsan Farahani</i></p>	<p>Modeling of Localization in Pseudoelastic NiTi Tubes Under Biaxial Stress States</p> <p><i>Karlos Kazinakis*, Stelios Kyriakides, Chad Landis</i></p>
#M321, Dynamics of Soft Materials and Structures Chairs(s): Robert Lowe, Room: Rowling Hall RRH 3.414				
<p>Settling Dynamics of Brownian Chains</p> <p><i>Lucas Hildebrand Pires da Cunha*, Jingjing Zhao, Frederick MacKintosh, Sibani Lisa Biswal</i></p>	<p>Nonlinear Dynamic Analysis of Thin Elastic Rods Using Kirchhoff Theory and B-spline Discretization</p> <p><i>Ehsan Osloub*, Mettupalayam Sivaselvan</i></p>	<p>Nonlinear Dynamics of Soft Bistable Beams Impacting a Sinusoidally Vibrating Shaker</p> <p><i>Michael Rouleau*, Steven Craig, Yiwei Xia, Roy Shieh, Major L. Robinson, Chengzhi Shi, Julien Meaud</i></p>	<p>Arbitrary-Order Sensitivity Analysis and Uncertainty Quantification in Phononic Metamaterials through Complex-Variable Finite Element Method</p> <p><i>David Restrepo*, Juan David Navarro, Arturo Montoya, Harry Millwater, Matthew Balcer</i></p>	
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TS 9: WEDNESDAY EVENING, JUNE 22

#M323, Soft Matter Mechanics, Physics, and Devices Chairs(s): Xueju Wang, Room: Rowling Hall RRH 3.304				
<p>IT - Soft Materials by Design: Unconventional Polymer Networks Give Extreme Properties</p> <p><i>Xuanhe Zhao*</i></p>	<p>Reconfiguration of Multistable 3D Ferromagnetic Composite Mesostructures Guided By Energy Landscape Surveys</p> <p><i>Yi Li*, Samuel J. Avis, Teng Zhang, Halim Kusumaatmaja, Xueju Wang</i></p>	<p>Multiphysics Modeling of Soft Ionic Conductors and Ionotronic Devices</p> <p><i>Nikola Bosnjak*, Max Tepermeister, Meredith Silberstein</i></p>	<p>Multiplex On-Mask Flexible MXene-Graphene Field Effect Transistor Sensing Influenza Virus and SARS-CoV-2</p> <p><i>Yanxiao Li*, Chenglin Wu</i></p>	
#M326, Fracture and Damage of Soft Materials Chairs(s): Nikolaos Bouklas, Room: AT&T Salon E				
<p>IT - Unexpected Consequences and Dynamics Arising from Hidden Structure in Slow Fracture</p> <p><i>Meng Wang, Mokhtar Adda-Bedia, Jay Fineberg*</i></p>	<p>Cavitation and Crack Arrest in a Thin Layer of Elastomer</p> <p><i>Sida Hao*, Rui Huang, Zhigang Suo</i></p>	<p>Interfacial Cavitation and Failure</p> <p><i>thomas henzel, Tal Cohen*</i></p>	<p>The Rate Dependent Tensile Failure of Photocured Elastomers</p> <p><i>Yuhai Xiang*, Jialiang Tao, Cody Schilling, Christian Franck, AJ Boydston, Stephan Rudykh</i></p>	
#M333, Cell Mechanics and Mechanobiology Chairs(s): Shiva Rudraraju, Room: Rowling Hall RRH 3.216 (Comal)				
<p>Stromal Bone Cells Age, Morphology and Bone Quality in a Bone-on-chip</p> <p><i>Bertrand Cinquin, Elise Foulatier, Charles Drame-Maigne, Rachel Sagar, Pascale Guillot, Tim Arnett, Christophe Sandt, Christine Chappard, Elisa Budyn*</i></p>	<p>A Fully 3D Computational Contractile Model of the Aortic Valve Interstitial Cell</p> <p><i>Alex Khang*, John Steinman, Xinzeng Feng, Michael Sacks</i></p>	<p>Yeast Biomaterial for Environmental Remediation</p> <p><i>Christos Athanasiou*, Patrissia Stathatou, Xuliang Qian, Neil Gershenfeld, Huajian Gao</i></p>	<p>Rapid Plastic Deformation of Cancer Cells Correlates with High Metastatic Potential</p> <p><i>Xingyu Xia, Yuan Lin*</i></p>	<p>A Morphological Fiber Model of Scar Tissues of Hip Capsule Ligaments Formed around Different Implant Materials</p> <p><i>Angelina Avgeri*, Samantha Sanders, Bertrand Cinquin, Laurent Sedel, Pascal Bizot, Elisa Budyn</i></p>
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TS 9: WEDNESDAY EVENING, JUNE 22

#M334, Trustworthy Augmented Intelligence and Data-driven Material Modeling

Chairs(s): Krishna Garikipati, Room: AT&T 106

Modeling the Genotype-Dependent Mechanical Behavior of Soft Tissues Using Deep Learning <i>Enrui Zhang*, Bart Spronck, Jay Humphrey, George Karniadakis</i>	Liquid Time-Constant Networks for Engineered Systems <i>Shrenik Zinage, Yifei Zhou*, Ilias Bilionis, Peter Meckl</i>	Multi-Fidelity Graph Neural Networks as Surrogate Models for Finite Element Analysis <i>Nolan Black*, Ahmad R. Najafi</i>	Reduced Order Modeling with Boosting Barlow Twins Self-supervised Learning for Contact Problem in a Compressible Hyperelastic Material <i>Teeratom Kadeethum*, Ida Ang, Jan Niklas Fuhg, Nikolaos Bouklas, Hongkyu Yoon</i>	Rapid Computation of NURBS Multi-body Contact with Neural Networks <i>Christian Goodbrake*</i>
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Thursday, June 23

TS 10: THURSDAY MORNING, JUNE 23

Plenary Speaker

John Dabiri

Bioinspired Ocean Exploration

8:30 – 9:45 AM

Room: AT&T 204; Chair: Eckart Meiburg

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M208, Cavitation and Bubble Dynamics Chairs(s): Eric Johnsen, Room: AT&T Salon D				
IT - Some Issues in the Large Eddy Simulation of Turbulent Cavitating Flows <i>Krishnan Mahesh*</i>	Liquid Re-entrant Flow and Bubbly Shock Induced Partial Cavity Shedding on a NACA0015 Hydrofoil <i>Harish Ganesh*, Anubhav Bhatt, Steven Ceccio</i>	Volumetric Velocimetry Study of Cavitation Inception in a Pair of Interacting Vortices <i>Daniel Knister*, Harish Ganesh, Steven Ceccio</i>	Experimental Study of Cavitation Unsteadiness and Erosion on a Plane Convex Hydrofoil <i>Luis Carlos Morocho*, Henda Djeridi, Marc Fivel, Giovanni Ghigliotti</i>	
#M212, Hydrodynamic Stability and Simulation of Complex Fluid Flows in Porous Media Chairs(s): Sujit Datta, Room: AT&T 101				
IT - Data Driven Modeling of Enhanced Oil Recovery by Polymer Flooding <i>Rohit Mishra, Prabir Daripa*</i>	Flow of a Contaminated Concentrated Emulsion through a Periodic Porous Medium <i>Alexander Zinchenko*, Jacob Gissing, Robert Davis</i>	Numerical Simulation of Droplets in Three-Dimensional Microchannels <i>Gesse Roure*, Alexander Zinchenko, Robert Davis</i>	Numerical Assessment of Velocity, Pressure and Temperature Fields of a Spur and Helical Gear Using Dynamic Meshing Technique <i>Arif Hossain*, Irfan Khan, Derrick Ko, Saurav Sengupta</i>	
#M217, Dynamics and Instabilities of Flows with Particles Across Length Scales Chairs(s): Eric Weeks, Room: AT&T 202				
IT - Bubbles and Fractures in Dense Suspensions <i>Irmgard Bischofberger*, Paul Lilin, Ivo Peters</i>	Granular Instabilities in Explosive Volcanic Eruptions <i>Josef Dufek*</i>	Fluid-Mediated Sources to Granular Temperature in Homogeneous Fluidization <i>Aaron Lattanzi, Vahid Tavanashad, Shankar Subramaniam, Jesse Capecelatro*</i>	Abrasive-laden Air Flow for Internal Surface Finishing <i>Richie Garg*, Puneeth Shekar, Priti Ranjan Panda, Koushik Viswanathan</i>	

TS 10: THURSDAY MORNING, JUNE 23

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M302, Large Deformation and Failure of Lithium-ion batteries Chairs(s): Thomas Tancogne-Dejean, Room: AT&T 116				
Multi-Scale Modeling of Lithium-ion Batteries, From Layers to Battery Packs <i>Elham Sahraei*, Mehdi Gilaki</i>	Damage of Prismatic Lithium-ion Cells Subject to Bending: Test, Model, and Detection <i>Wei Li*, Bobin Xin, Hsin Wang, Juner Zhu</i>	Strain-Rate Dependent Response of Lithium-ion Pouch Cell: Experiments and Modeling <i>Thomas Tancogne-Dejean*, Vincent Grolleau, Dirk Mohr</i>	A Nonlinear Thermo-Viscoelastic Model for Polymeric Battery Separators <i>Royal Ihuaenyi*, Xinran Xiao, Jie Deng, Chulheung Bae</i>	
#M307, Thermodynamic Modeling of Void Evolution, Fatigue, and Tribo-Wear Chairs(s): Jude Osara, Room: Rowling Hall RRH 3.216 (Comal)				
IT - Modeling Ultrasonic Vibration Fatigue with Unified Mechanics Theory <i>Hsiao Wei Lee, Cemal Basaran*, Halina Egner, Adam Lipski, Micha? Piotrowski, Stanislaw Mrozinski, Noushad Bin Jamal M, Lakshmana Rao</i>		Science of Degradation with Application to Wear and Fatigue <i>Michael Khonsari*</i>	Formulation of the Dynamics of Dissipative Systems Via the Degradation Entropy Generation Theorem <i>Michael Bryant*</i>	Reaction Diffusion Model for Solid State Phase Evolution with Application to Phase Evolution in Solder Joints <i>Sudarshan Prasad*, Huanyu Liao, Chetan Jois, Ganesh Subbarayan</i>
#M310, Plasticity & Ductile Failure Chairs(s): W. M. Scherzinger, Room: AT&T 203				
A Novel In-plane Torsion Experiment Enabling Plasticity Characterization at Large Strains <i>Thomas Tancogne-Dejean*, Vincent Grolleau, Christian Roth, Dirk Mohr</i>	Calibration of Elastoplastic Constitutive Model Parameters with Automatic Differentiation-based Sensitivities: Application to Full-field Experimental Data <i>Daniel Seidl*, Brian Granzow</i>	Exploration of Ductile Failure Processes in an Aluminum Alloy through X-Ray CT Scan and Microscopy <i>Jianing Xie*, Krishnaswamy Ravi-Chandar</i>	Characterization of Work-Hardening at High Strains in Sheet Metal Forming <i>Fabian Stiebert*, Heinrich Traphöner, Felix Kolpak, A. Erman Tekkaya</i>	
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 10: THURSDAY MORNING, JUNE 23

#M311, Mechanics of Friction, Fracture and Damage in Materials Across Scales Chairs(s): K. Ravi-Chandar, Room: AT&T 201				
IT - A 3-D Micro-Mechanical Framework to Predict Progressive Damage in Printed Discontinuous Fiber-Reinforced Composites <i>Maryam Shakiba*, Reza Sepasdar</i>	IT - In-situ Microscale Fracture of Bone Shows Nanofibril Toughening Mechanisms <i>Ottman Tertuliano*, Bryce Edwards, Lucas Meza, Virkam Deshpande, Julia Greer</i>	Experimental and Computational Investigations of Dynamic Fracture Processes in Glass-ceramics <i>Liuchi Li*, Todd Hufnagel, KT Ramesh</i>	Influence of Material Heterogeneity on Damage and Failure in Brittle Solids under Dynamic Compression <i>Sakshi Braroo*, K.T. Ramesh</i>	Graph Neural Network Framework to Emulate Multiple Crack Propagation, Crack Coalescence, and Stress Evolution in Brittle Materials <i>Roberto Perera, Davide Guzzetti, Vinamra Agrawal*</i>
#M316, Mechanics of Architected Materials Chairs(s): Lucas Meza, Room: AT&T 204				
IT - Toughened Interpenetrating Lattices <i>Brad Boyce*, Benjamin White</i>	Exploiting Architected Plasticity to Enhance Fracture Toughness while Maintaining Strength <i>Sage Fulco, Michal Budzik, Kevin Turner*</i>	Engineering Fracture Mechanisms in Lightweight Nanoarchitected Materials <i>Zainab Patel*, Lucas Meza</i>	Energy-Based Fracture Mechanics of 2D Lattice Materials <i>Shengzhi Luan, Enze Chen, Stavros Gaitanaros*</i>	
#M317, Mechanics of Multifunctional Low-Dimensional Materials Chairs(s): Wei Gao, Room: AT&T 106				
IT - Fracture of 2D Materials – In Situ Experiments and ML Parameterized Force Fields <i>Horacio Espinosa*, Xu Zhang, Hoang Nguyen</i>	Peeling and Sliding of Graphene Nanoribbons with Periodic van der Waals Interactions <i>Rui Huang*, Zhiming Xue</i>	Interface Mechanics of 2D Materials on Metal Substrates <i>Nikhil Chandra Admal*, Tusher Ahmed, Mitisha Surana</i>	Crack Evolution in Multilayered 2D Materials in the Presence of Interlayer Sliding <i>Bo Ni*, Huajian Gao</i>	
#M320, Mechanics and Physics of Active Materials Chairs(s): Bjoern Kiefer, Room: Rowling Hall RRH 3.208 (Brazos)				
IT - Plastic Strain Induced Phase Transformations under High Pressure: Four-Scale Theory, Experiments, and Phenomena <i>Valery I Levitas*</i>	A Framework for Parallel Computing in Finite Deformation Chemo-mechanics with Application to the Modeling of Hydrogels <i>Stefan Prüger*, Friederike Röver, Oliver Rheinbach, Bjoern Kiefer</i>	Numerical Investigations on Martensite Formation in Fe–Mn–Al–Ni SMA Using a Thermodynamically-informed Phase-field Approach <i>Vincent von Oertzen*, Bjoern Kiefer, Andreas Leineweber, Alexander Walnsch</i>	A Gradient Regularized Constitutive Model for Pseudoelastic Shape Memory Alloys <i>Hongrui Yu*, Chad Landis</i>	
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 10: THURSDAY MORNING, JUNE 23

#M323, Soft Matter Mechanics, Physics, and Devices Chairs(s): Ying Li, Room: Rowling Hall RRH 3.304				
<p>IT - Mechanical Properties of Glass Fiber-Reinforced Polymer Composites Printed via Multi Jet Fusion</p> <p style="text-align: center;"><i>Xiaojiang Liu, Wei Shian Tey, Lihua Zhao, Kun Zhou*</i></p>	<p>Thermoviscoelastic Mechanics of a Polymeric Soft Foam: Experimental Characterization and Constitutive Modeling</p> <p style="text-align: center;"><i>Xiangyu Sun*, Jialiang Tao, Alexander Landauer, David Henann, Christian Franck</i></p>	<p>Large-deformation Constitutive Modeling of Isotropic, Viscoelastic Foams</p> <p style="text-align: center;"><i>Xiuqi Li, Jialiang Tao, Alexander Landauer, Christian Franck, David Henann*</i></p>	<p>Recycling of Nanowire Percolation Network for Sustainable Wearable</p> <p style="text-align: center;"><i>Yuxuan Liu*, Hongyu Wang, Yong Zhu</i></p>	
#M326, Fracture and Damage of Soft Materials Chairs(s): Oscar Lopez-Pamies, Room: AT&T Salon E				
<p>A Universal Mechanism for Extreme Toughening of Soft Materials</p> <p style="text-align: center;"><i>Shaoting Lin*, Xuanhe Zhao</i></p>	<p>Rate-Dependent Damage Mechanics of Polymer Networks with Reversible Bonds</p> <p style="text-align: center;"><i>Samuel Lamont*, Jason Mulderrig, Nikolaos Bouklas, Franck Vermerey</i></p>	<p>Modeling Cavitation of Soft Gels under Complex Stress States</p> <p style="text-align: center;"><i>Yuan Ji*, Justin Wilkerson</i></p>	<p>Interplay Between Fibrillation and Cavitation in PSA Tapes: Numerical Study</p> <p style="text-align: center;"><i>Krupal Patel*, Matteo Ciccotti, Etienne Barthel</i></p>	<p>A Unified Statistical Mechanics-Based Extensible Freely Jointed Chain Model and its Implications to Polymer Chain Scission Energetics</p> <p style="text-align: center;"><i>Jason Mulderrig*, Brandon Talamini, Nikolaos Bouklas</i></p>
#M331, Programmable and Active Metamaterials Chairs(s): Christopher Sugino, Room: AT&T 301				
<p>IT - Metaclusters for the Full Control of Flexural Waves</p> <p style="text-align: center;"><i>Daniel Torrent*, Marc Martí-Sabaté, Zhihui Wen, Yabin Jin, Pawel Packo, Andrew Norris</i></p>	<p>Active Acoustic Metamaterials with Sensor-Driver Unit Cells</p> <p style="text-align: center;"><i>Bogdan-loan Popa*</i></p>	<p>Non-Hermitian Acoustic Metamaterials with Periodically Distributed Electroacoustic Feedback</p> <p style="text-align: center;"><i>Danilo Braghini*, Adriano Goto, Matheus Rosa, José Arruda</i></p>	<p>Programmable Group Velocity Profile Tailoring in a Piezoelectric Rainbow Metamaterial</p> <p style="text-align: center;"><i>Mustafa Alshaqaq, Christopher Sugino*, Alper Erturk</i></p>	
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 10: THURSDAY MORNING, JUNE 23

#M332, Machine Learning in the Experimental Mechanics of Materials

Chairs(s): Jon Estrada, Room: Rowling Hall RRH 3.414

IT - Data Driven Modeling of Interfacial Traction Separation Relations using a Thermodynamically Consistent Neural Network

Congjie Wei, Jiaxin Zhang, Kenneth M. Liechti, Chenglin Wu*

Neural Networks for Model Order Reduction in Simulations of Structural Mechanics: Slinky as a Test Case

Mohammad Khalid Jawed, Qiaofeng Li, Tianyi Wang, Vwani Roychowdhury*

An Adaptive Framework for Determining Optimal Valid Model: Application to Size Dependent Plasticity

Danial Faghihi, Jingye Tan, Kathryn Maupin, Baoshan Liang*

Inference of Deformation Mechanisms, Constitutive Response, and Experimental Efficacy Using Variational System Identification with Magnetic Resonance Cartography

*Denislav Nikolov, Siddhartha Srivastava, Ulrich Scheven, Ellen Arruda, Krishna Garikipati, Jon Estrada**

TS 11: THURSDAY AFTERNOON, JUNE 23

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M102, Contemporary Meshfree Methods in Computational Mechanics Chairs(s): John Foster, Room: Rowling Hall RRH 3.406				
IT - Nodally-Integrated RKPM for Deposition-Based Three-Dimensional Printing <i>Michael Hillman*, Kuan Chung Lin, Feihong Liu, Hanbin Cheng, Jiarui Wang, Aleksandra Radlinska</i>	A Bootstrapping Approach for Meshfree Analysis on Geometrically Complex Domains <i>Joseph Bishop*</i>	A Highly Efficient and Portable Three-Dimensional Fluid-Structure Simulation Package Implemented in LAMMPS <i>Ying Li*</i>	One Point Integration for FEM and IGA <i>Weican Li*, Masoud Behzadinasab, Georgios Moutsanidis, Yuri Bazilevs</i>	
#M108, Mechanics of Granular and Geo-Mechanical Systems Chairs(s): David Henann, Room: AT&T 105				
Granular Column Collapse: Role of Polydispersity on the Flow Velocity <i>Oscar Polania*, Miguel Cabrera, Mathieu Renouf, Emilien Azéma</i>	A Continuum Model for Coupled Size Segregation and Flow in Dense, Bidisperse Granular Materials <i>Shihong Li, Daren Liu, Harkirat Singh, David Henann*</i>	Modeling Shear-Induced Sand Production with a Stress-Based Equivalent-Plastic-Deviatoric Strain Material Removal Rule <i>Joel Given*, Kenichi Soga</i>	Discrete Element Modeling of Comminuted Ceramic Subject to Extreme Confinement Conditions <i>Zachary Wilson*, Brian Powers, George Gazonas</i>	A Class of Strain-Hardening Hysteretic Contact Models and Discrete Element Modeling of Granular Hopper Flow <i>Qiushi Chen*, Feiyang Chen, Yidong Xia</i>
#M208, Cavitation and Bubble Dynamics Chairs(s): Tim Colonius, Room: AT&T Salon D				
Shock-Induced Aero-Breakup of Droplets Containing Bubbles. <i>Jose Rodolfo Chreim*, Tim Colonius</i>	Fast Integration Methods for Averaging Bubble Dynamics at Sub-Grid Scales <i>Spencer Bryngelson*</i>	Acoustically Induced Growth and Collapse of a Cavitation Bubble in Water <i>Minki Kim*, Yuenong Ling, Eric Johnsen</i>	Solution of Bimaterial Riemann Problems with Arbitrary Equations of State for Compressible Multiphase Flow and Fluid-Structure Interaction Simulations <i>Wentao Ma*, Xuning Zhao, Shafquat Islam, Aditya Narkhede, Kevin Wang</i>	A Least-Squares Constrained Sharp-Interface Method for Bubble Dynamics <i>Ratnesh K. Shukla, Pratik Das*, Jonathan B. Freund</i>

TS 11: THURSDAY AFTERNOON, JUNE 23

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M212, Hydrodynamic Stability and Simulation of Complex Fluid Flows in Porous Media Chairs(s): Prabir Daripa, Room: AT&T 101				
IT - Viscoelastic Flow Instabilities in Porous Media <i>Sujit Datta*</i>	Linear Stability Results When a Newtonian Fluid Displaces an Oldroyd-B fluid in a Hele-Shaw Cell <i>Zhiying Hai*, Prabir Daripa</i>	IT - Capillary Pressure of Flowing Foam in Porous Media <i>Sibani Lisa Biswal*</i>	Modeling of Dispersive Effects in Multiphase Multicomponent Porous Media Flows <i>Prabir Daripa*, Sourav Dutta, Prajesh Jangale</i>	
#M217, Dynamics and Instabilities of Flows with Particles Across Length Scales Chairs(s): Irmgard Bischofberger, Room: AT&T 202				
IT - Rheology of Mobile Sediment Beds: Particle-Resolved Simulations <i>Bernhard Vowinckel*, Christoph Rettinger, Pascale Aussillous, Eckart Meiburg, Élisabeth Guazzelli</i>	Fine Scale Turbulent and Granular Processes in Intense Sediment Transport Regimes <i>Julien chauchat*, Helder Guta, remi chassagne, cyrille bonamy, david hurther, Tian-Jian Hsu</i>	Microgravitational Particle Interaction in Oscillatory Flow <i>Fabian Kleischmann*, Paolo Luzzatto-Fegiz, Eckart Meiburg, Bernhard Vowinckel</i>	Grain-Resolving Simulations of Submerged Cohesive Granular Collapse <i>Rui Zhu, Zhiguo He, Kunpeng Zhao, Bernhard Vowinckel, Eckart Meiburg*</i>	
#M307, Thermodynamic Modeling of Void Evolution, Fatigue, and Tribo-Wear Chairs(s): Cemal Basaran, Room: Rowling Hall RRH 3.216 (Comal)				
IT - Thermodynamics of Phenomenology, Performance and Degradation <i>Jude Osara*, Michael Bryant</i>	Application of the Degradation Entropy Generation Theorem to Degradation of Batteries <i>Michael Bryant*, Jude Osara</i>	High Strain Rate Model for bcc Metals Based on the Unified Mechanics Theory <i>Cemal Basaran*, Noushad Bin Jamal, Lakshamana Rao</i>	Temperature-Only Degradation Analysis <i>Jude Osara*</i>	
#M310, Plasticity & Ductile Failure Chairs(s): Eliot Fang, Room: AT&T 203				
Network Plasticity: a Mesoscale-to-Continuum Model for Grain Boundary Mediated Plasticity <i>Daniel Bugas*, Brandon Runnels</i>	Model for Grain Boundary Stress Field Evolution due to Slip Transmission History and Influence on Subsequent Dislocation Transmission <i>Darshan Bamney*, Laurent Capolungo, Douglas E. Spearot</i>	A Microvoid Coalescence Criterion Accounting for Strain Hardening <i>Sahil Wajid*, Jean-Baptiste Leblond, Amine Benzerga</i>	The Effect of Image Interactions on the Kinkpair Nucleation of Screw Dislocation <i>Fei Shuang*, Wei Gao</i>	

TS 11: THURSDAY AFTERNOON, JUNE 23

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M311, Mechanics of Friction, Fracture and Damage in Materials Across Scales Chairs(s): Ahmed Elbanna, Room: AT&T 201				
IT - Theory for the Statistics of Slip at a Frictional Interface: Unifying Rate-and-State and Depinning <i>Tom de Geus*, Matthieu Wyart</i>	The Fundamental Physics of the Onset of Frictional Motion: How Does Friction Start? <i>Shahar Gvirtzman*, Jay Fineberg</i>	Rubber Friction: From Steady Sliding to Stick Slip and Squeaking <i>Gabriele Albertini, Adel Djellouli*, David Weitz, Katia Bertoldi</i>	Frictional Nucleation Processes at Interfaces with Non-Uniform Properties <i>David Kammer*, Gabriele Albertini, Miguel Castellano Merino</i>	Advanced Earthquake Sequence Simulations with Off-fault Visco-plasticity <i>Mohamed Abdelmeguid*, Ahmed Elbanna</i>
#M316, Mechanics of Architected Materials Chairs(s): Lucas Meza, Room: AT&T 204				
IT - Design of Architected Solids with Optimal Failure Properties <i>Chengyang Mo, Tim Saal, Paris Perdikaris, Jordan Raney*</i>	Failure Analysis of Architected-material Structures Using Moment-Curvature Relationships <i>Alekhya Banki*, Arun Srinivasa, Junuthula Reddy</i>	On the Compressive Strength of Brittle Architected Materials <i>Enze Chen*, Shengzhi Luan, Stavros Gaitanaros</i>		
#M317, Mechanics of Multifunctional Low-Dimensional Materials Chairs(s): Qing Tu, Room: AT&T 106				
IT - Electromechanical Systems Enabled by Interfacial Slip in 2D Material Heterostructures <i>Arend van der Zande*</i>	In Situ Self-Healing of Beam Damaged MXenes under TEM <i>Chenglin Wu*, Yanxiao Li, Congjie Wei</i>	Size Dependency and Structural Stability of Twisted Bilayer Graphene <i>Vahid Morovati*, Zhiming Xue, Kenneth Liechti, Rui Huang</i>	Applying the Weibull Distribution to Nanomaterial Strength Measurements: Insights on the Representative Volume Element <i>Rodrigo Bernal*</i>	
#M320, Mechanics and Physics of Active Materials Chairs(s): Bjoern Kiefer, Room: Rowling Hall RRH 3.208 (Brazos)				
IT - Soft Magnetoactive Materials: Magnetomechanical Deformations and Instabilities <i>Stephan Rudykh*, Nitesh Arora, Parag Pathak, Philip Buskohl, Abigail Juhl, Vincent Chen</i>	Active Damage Control in Magnetoactive Elastomers Induced by Magnetic Field <i>Nusrat J. Salim*, Ignacio Arretche, Connor D. Pierce, Kathryn H. Matlack</i>	Magnetoelastic Instabilities in Soft Microstructured Magnetoactive Elastomers <i>Nitesh Arora*, Parag Pathak, Vincent Chen, Abigail Juhl, Philip Buskohl, Stephan Rudykh</i>	Modeling Photo-sensitive Polymeric Gels <i>Nikola Bosnjak*, Shawn Chester</i>	

TS 11: THURSDAY AFTERNOON, JUNE 23

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M326, Fracture and Damage of Soft Materials Chairs(s): Franck Vernerey, Room: AT&T Salon E				
Fracture of Poroviscoelastic Hydrogels <i>Si Chen*, Krishnaswamy Ravi-Chandar</i>	Modeling Dynamic Fracture in Rubber-like Materials <i>Ida Ang*, Bin Li, Nikolaos Bouklas</i>	Using Volume Controlled Cavity Expansion (VCCE) to Inform Constitutive Models of Fracture Energy in Soft Materials at Increasing Deformation Rates <i>Hannah Varner*, Tal Cohen</i>	Cavitation and Fracture Mechanism in Soft Gelatin Gel <i>Fuad Hasan, Ashfaq Adnan*</i>	
#M329, Mechanics of Soft and Active Interfaces: Theory, Simulations, and Experiments Chairs(s): Berkin Dortdivanlioglu, Room: Rowling Hall RRH 3.304				
Cavitation Induced Interfacial Wear of Soft Materials at the Liquid-hydrogel Interface <i>Alexander McGhee*, jin yang, Christian Franck</i>	A Model for Mechanosensitive Cell Migration and Contractility in ECM-rich Microtissues <i>Jaemin Kim*, Erik Maitland, Mahmut Selman Sakar, Nikolaos Bouklas</i>	A Self-Adhesion Condition for Slanted Micropillars <i>Albert Kong*, Mattia Bacca</i>	Modeling Energetic Surfaces with Flexural-Resistance in Soft Solids and Nanostructures <i>Animesh Rastogi, Berkin Dortdivanlioglu*</i>	
#M331, Programmable and Active Metamaterials Chairs(s): Bogdan Popa, Room: AT&T 301				
IT - Understanding the Magneto-mechanical Coupling in Magneto-active Elastomeric Metastructures <i>Kathryn Matlack*, Connor Pierce, Ignacio Arretche</i>	Adaptive Control of the Low Frequency Waves in Electromechanical Metasurfaces <i>Serife Tol*</i>	Exploring Programmable Defect Modes in Piezoelectric Metamaterials <i>Danilo Beli, Renan Thomes, Carlos De Marqui Junior*</i>	Harnessing Time Modulation in Structures: Frequency Conversion and Anti-reflection Strategies <i>Emanuele Riva*, Santini Jonatha, Braghin Francesco</i>	
#M332, Machine Learning in the Experimental Mechanics of Materials Chairs(s): Alex Landauer, Room: Rowling Hall RRH 3.414				
On Oocyte Profiling with Indentation: Using Neural Networks to Integrate Mechanical Characterization and Image Analysis <i>Samuel Lamont*, Joel Abadie, Emmanuel Piat, Andrei Constantinescu, Franck Vernerey</i>	3D Atomic Structure Reconstruction of 2D Materials Using in-situ TEM Imaging <i>Congjie Wei*, Jiaxin Zhang, Chenglin Wu</i>	Spatially Mapping 2D Digital Image Correlation Measurement Uncertainty via Deep Learning <i>Alexander Landauer*</i>	Deep-learning Assisted Big-data-generating Experiments under Extreme Conditions <i>Hanxun Jin*, Rodney J. Clifton, Kyung-Suk Kim</i>	Neural Network Driven Nanoindentation Analysis <i>Frank Popelar*, Vahid Morovati, Kenneth Liechti, Rui Huang</i>

TS 12: THURSDAY EVENING, JUNE 23

03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM
#M102, Contemporary Meshfree Methods in Computational Mechanics Chairs(s): Yuri Bazilevs, Room: Rowling Hall RRH 3.406				
<p>A Meshfree Peridynamic Model for Brittle Fracture in Randomly Heterogeneous Materials</p> <p><i>Yue Yu*, Yiming Fan, Huaqian You, Xiaochuan Tian, Xiu Yang, Xingjie Li, Naveen Prakash</i></p>	<p>Coupling Peridynamics with the Classical Theory: Overview, Challenges, and Recent Developments</p> <p><i>Pablo Seleson*</i></p>	<p>A Machine-Learning Framework for Peridynamic Material Models with Physical Constraints</p> <p><i>Xiao Xu, Marta D'Elia, John Foster*</i></p>		
#M108, Mechanics of Granular and Geo-Mechanical Systems Chairs(s): David Henann, Room: AT&T 105				
<p>Power-Law Scaling of the Mechanical Response of Jammed Packings of Spherical and Non-Spherical Particles</p> <p><i>Corey OHern*, Jerry Zhang, Mark Shattuck</i></p>	<p>Analysis of Sea Ice Summer Decline Using LS-DEM Simulations and MODIS Satellite Images</p> <p><i>Rigoberto Moncada Lopez*, Mukund Gupta, Andrew Thompson, Jose Andrade</i></p>	<p>Learnable Differential Simulator for Modeling Granular Flows</p> <p><i>Krishna Kumar*</i></p>	<p>Analysis of Tapped Granular Systems Using Machine Learning Approaches</p> <p><i>Vishagan Ratnaswamy*, Anthony Rosato, Youngjin Chung, Noor Mili, Jonathan Dye, Denis Blackmore</i></p>	<p>Numerical Modeling of Mechanical Compaction of Sedimentary Basins</p> <p><i>Kunal Bhagat*, Zirou JIN, Hiroki Sone, Shiva Rudraraju</i></p>
#M208, Cavitation and Bubble Dynamics Chairs(s): Jonathan Estrada, Room: AT&T Salon D				
<p>IT - Laser-Induced Inertial Cavitation in Hydrogels: Ultra-High Strain-Rate Material Characterization, Dynamic Instabilities, and Full-Field Deformation Measurements</p> <p><i>Jin Yang*, Alexander McGhee, Harry Cramer, Elizabeth Bremer, David Henann, Christian Franck</i></p>	<p>Reduced Order Inertial Microcavitation Rheometry</p> <p><i>Zhiren Zhu, Bachir Abeid, Jon Estrada*</i></p>	<p>Inertial Microcavitation Rheology of Porcine Brain Tissue and Development of a Scaling Law Between Fixed and Fresh Tissue Properties</p> <p><i>Elizabeth Bremer*, Harry Cramer, Christian Franck</i></p>	<p>Modeling High-Strain-Rate Inertial Microcavitation in Soft Materials: The Role of Material Response in Bubble Dynamics</p> <p><i>Anastasia Tzoumaka*, Jin Yang, Christian Franck, David Henann</i></p>	

TS 12: THURSDAY EVENING, JUNE 23

03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM
#M217, Dynamics and Instabilities of Flows with Particles Across Length Scales Chairs(s): Bernhard Vowinckel, Room: AT&T 202				
IT - Breakup in Turbulence by Eddies Across Multiple Length Scales <i>Rui Ni*, Yinghe Qi, Shiyong Tan</i>	Drag and Turbulence in Particle-Laden Compressible Flows <i>Archana Sridhar*, Mehdi Khalloufi, Jesse Capecehatro</i>	How Fast Does an Inertial Particle Fall Through a Turbulent Boundary Layer? <i>Andrew Bragg*, David Richter, Guiquan Wang</i>	Multiphase Materials in Turbulent Flows <i>Charles Petty*, Andre Benard</i>	
#M220, Nonlinear Dynamics of Active Fluids and Transition to Active Turbulence Chairs(s): Piyush Grover, Room: AT&T 101				
IT - Understanding and Designing the Collective Dynamics of Droplets of Active Nematic Fluids <i>Yuan Young*, David Stein, Michael Shelley</i>	Strong Coupling between the Director Field and Fluid Flow in Microtubule-Based Active Nematics <i>Kevin Mitchell*, Ibrahim Abu-Hijleh, Amanda Tan, Linda Hirst</i>	Optimal Control of an Active Liquid Crystal <i>Michael Norton*, Piyush Grover, Michael Hagan, Seth Fraden</i>		
#M310, Plasticity & Ductile Failure Chairs(s): Brian Lester, Room: AT&T 203				
IT - Homogenized Modeling of Anisotropic Impact Damage in Rolled AZ31B with Aligned Second-phase Particles <i>Caleb Foster*, Angela Olinger, Justin Wilkerson</i>	Probing Fracture Anisotropy with Tubular Specimens: The Effect of Specimen Geometry <i>Madhav Baral, Yannis Korkolis*</i>	Simplified Mechanism for Anisotropic Failure in Modular Material Models <i>Andrew Stershic*, Brian Lester</i>	Void Clustering and the Effective Behaviour of Porous Materials: A Fast Fourier Transform Based Analysis <i>Francisco Medrano*, Aitor Cruzado, Amine Benzerga</i>	
#M311, Mechanics of Friction, Fracture and Damage in Materials Across Scales Chairs(s): Tom de Geus, Room: AT&T 201				
IT - Direct Measurements of Toughness Enhancement at Complex Crack Tips <i>John Kolinski*, Xinyue Wei</i>	Time Dependent Energy Release Rate for Fracture in Viscoelastic Materials and Interfaces <i>Zhanrui Zhang*, Rui Huang, Kenneth Liechti</i>	Breakdown of Amontons' Law due to Precursor Slip in 3D Viscoelastic Object <i>Wataru Iwashita*, Hiroshi Matsukawa, Michio Otsuki</i>	IT - Isogeometric Multilayer Composite Shell Structures: Plasticity, Damage, Delamination and Impact Modeling <i>Yuri Bazilevs*</i>	
03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM

TS 12: THURSDAY EVENING, JUNE 23

#M313, Deformation and Assembly of Materials and Structures at Solid-liquid Interfaces Chairs(s): Baoxing Xu, Room: Rowling Hall RRH 3.216 (Comal)				
<p>IT - Out-of-contact Peeling in Viscous Adhesion</p> <p><i>Joelle Frechette*</i></p>	<p>Hairy Fluid Mechanics: Interfacial Flows through Networks of Flexible Fibres</p> <p><i>Christopher Ushay*, Etienne Jambon-Puillet, Pierre-Thomas Brun</i></p>	<p>Mechanics and Application of Elastic Wetting: Substrate-Supported Droplets Confined by Soft Elastic Membranes</p> <p><i>Yifan Rao*, Shutao Qiao, Zhaohe Dai, Nanshu Lu</i></p>	<p>Transfer of Films Enabled by Solid-liquid Interactions</p> <p><i>Baoxing Xu*</i></p>	
#M316, Mechanics of Architected Materials Chairs(s): Paul Plucinsky. Room: AT&T 204				
<p>Spinodoid Metamaterials: Curvature-dependent Mechanics</p> <p><i>Carlos Portela*, Somayajulu Dhulipala</i></p>	<p>Ultrahigh Strain Rate Performance of Gradient Spinodal Ceramics</p> <p><i>Nishita Anandan, Lucas Meza*</i></p>	<p>Axial Point Group Auxetics with Emergent Rotational Responses</p> <p><i>Jeffrey Lipton*, Molly Carton</i></p>	<p>Coming Full Circle: from Phenomenological Shape-Morphable Kirigami to the Rational Design of Shape-Programmable-Controllable 3D Kirigami Metamaterials</p> <p><i>Nicolas Alderete*, Nibir Pathak, Horacio Espinosa</i></p>	<p>Topological Defects in Cellular Solids under Geometric Frustration: Animal Architecture and Bio-inspired Designs</p> <p><i>Francisco Lopez Jimenez*, Golnar Gharoni Fard, Orit Peleg</i></p>
#M317, Mechanics of Multifunctional Low-Dimensional Materials Chairs(s): Yingchao Yang, Room: AT&T 106				
<p>IT - Fracture of Two-Dimensional Materials</p> <p><i>Jun Lou*</i></p>	<p>IT - Moire Mechanics and the Role of Corrugation in Exotic Properties of Twisted Bilayer Graphene</p> <p><i>Harley Johnson, Tawfiqur Rakib*</i></p>	<p>Phase Transition in Monolayer MoTe2</p> <p><i>Fei Shuang, Wei Gao*</i></p>	<p>High Quality Growth and Transfer of Graphene on Sapphire</p> <p><i>Sivasakthya Mohan*, Yuqian Gu, Dmitry Kireev, Deji Akinwande, Kenneth Liechti</i></p>	
03:45 PM	04:05 PM	04:25 PM	04:45 PM	05:05 PM

TS 12: THURSDAY EVENING, JUNE 23

#M320, Mechanics and Physics of Active Materials Chairs(s): Stephan Rudykh, Room: Rowling Hall RRH 3.208 (Brazos)				
Electrically-Induced Twist in Geometrically Incompatible Tubes <i>Noy Cohen*, Nir Emuna</i>	A Computational Investigation of the Dynamics and Rheological Properties of MR Fluids <i>Mingyang Tan, Joshua A. Adeniran, Travis W. Walker*</i>	Damping Extraction of Cyclically Symmetric Modes Using Embedded Adaptive Elements <i>Andres Rodriguez*, Jeffrey Kauffman, Jarred Nix</i>	Processing and Shape-Setting of Shape Memory Alloys for Small Satellite Antennas (ShaMAN) <i>Nehal Al Jabri*, Marcus Young, Steven WidELITZ, Art Palisoc</i>	Effect of Partial Thermal Cycles During Fatigue Testing of Ni-Rich High Temperature Shape Memory Alloys Using Synchrotron Radiation X-Ray Diffraction <i>Faith Gantz*, Alexander Demblon, Marcus Young, Ibrahim Karaman</i>
#M322, Multiscale Methods and Mechanics of Soft Matter and Hierarchical Materials Chairs(s): Zhen Li, Room: AT&T 116				
IT - Multiscale Mechanics Design in Cellulose-Enabled High-Performance Functional Materials <i>Teng Li*</i>	A Stochastic Kinetic Model for Cyclic Loading of Collagen Fibrils <i>Amir Suhail*, Anuradha Banerjee, Rajesh Ravindran</i>	Effect of In-Plane Heterogeneous Structures and Interlayer Sliding of 2D Nanofillers on the Mechanical and Viscoelastic Properties of Polymer Nanocomposites <i>Zhaoxu Meng*, Zhangke Yang, Cho-Chun Chiang, Yitao Wang, Jane Breslin</i>	Distributed Order Fractional Timoshenko Beam Theory: A Multiscale Uniaxial Nonlocal Beam Model <i>Wei Ding*, Sansit Patnaik, Fabio Semperlotti</i>	
#M326, Fracture and Damage of Soft Materials Chairs(s): Nikolaos Bouklas, Room: AT&T Salon E				
Constitutive Framework for Thermo-chemically Aged Elastomer Based on Crosslink Density and Phase-field Approach to Brittle Fracture <i>Aimane Najmeddine*, Maryam Shakiba</i>	Photo-degradation of Poly(lactic acid) PLA <i>Keven Alkhoury*, Shawn Chester</i>	Impact Dynamics of Hydrogel Plugs <i>Joseph Bonavia*, Tal Cohen</i>	Modelling Fiber Plasticity in Soft and Biological Composites <i>Fernanda Fontenele*, Nikolaos Bouklas, Michalis Agoras</i>	
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TS 12: THURSDAY EVENING, JUNE 23

#M329, Mechanics of Soft and Active Interfaces: Theory, Simulations, and Experiments Chairs(s): Berkin Dortdivanlioglu, Room: Rowling Hall RRH 3.304				
Fabric-based Shape-morphing Inflatable Structures with Programmable Turing Pattern Textures <i>Masato Tanaka*, Yuyang Song, Tsuyoshi Nomura</i>	Fibrous Soft Tissue Modelling as Embedded, Discrete Fiber Networks <i>Sotirios Kakaletsis*, Emma Lejeune, Manuel Rausch</i>	Flow-induced Vibrations of Closely Packed Flexible Flags <i>Aojia Jiang*, Oluwafemi Ojo, Kourosh Shoele, Kohtanen Eetu, Erturk Alper</i>		
#M331, Programmable and Active Metamaterials Chairs(s): Serife Tol, Room: AT&T 301				
IT - Dynamics and Wave Propagation of Multistable Metastructures <i>Myungwon Hwang, Andres Arrieta*</i>	Tailoring of Nonlinear Waves by Purposeful Introduction of Defects in Periodic Mechanical Metamaterials: A Phase Space Analysis <i>Mohammed Mohammed, Piyush Grover*</i>	Nonlinear Dispersion Analysis of a Periodic Euler-Bernoulli Beam with Pseudoelastic Shape Memory Alloy Resonators <i>Ralston Fernandes*, Dimitris Lagoudas, James Boyd, Sami El-Borgi</i>	Sensing of Mechanical Perturbations Through Complex Frequency Excitation <i>Curtis Rasmussen*, Matteo Mazzotti, Massimo Ruzzene</i>	
#M332, Machine Learning in the Experimental Mechanics of Materials Chairs(s): TBA, Room: Rowling Hall RRH 3.414				
A Machine Learning Framework for Damage Mechanism Identification from Acoustic Emission in Unidirectional SiC/SiC CMCs <i>Caelin Muir*, Bhavana Swaminathan, Amjad Almansour, Michael Presby, Kathleen Sevener, Craig Smith, James Kiser, Samantha Daly</i>	FEA Trained CNN To Accurately Characterize A Crack And Classify Interacting Flaws From Experimental Ultrasound Measurements <i>Sijun Niu*, Vikas Srivastava</i>	An Information Entropy-based IoT System for Real-Time Fracture Monitoring <i>Sarah Malik*, Antonios Kontsos</i>	Discovering Structures for Energy Absorption using Autonomous Experimentation <i>Kelsey Snapp*, Benjamin Verdier, Aldair Gongora, Timothy Lawton, Emily Whiting, Keith Brown</i>	Combining Multimodal Data of Fatigue Fracture Surfaces for Analysis in a CNN <i>Katelyn Jones*, Paul Shade, Reji John, William Musinski, Anthony Rollett, Elizabeth Holm</i>

TS 13: FRIDAY MORNING, JUNE 24

Von Karmen Lectures 9:00 – 10:00 AM Room: AT&T 204; Chair: Beverley McKeon		
09:00 AM	09:20 AM	09:40 AM
#M110, 100 Years of International Collaboration in Mechanics: The Legacy of Theodore von Karman (by invitation only) Chairs(s): Beverly McKeon, Room: AT&T 204		
Introduction to 100 Years of International Collaboration in Mechanics: The Legacy of Theodore von Karman <i>Beverley McKeon*, Horacio Espinosa, Norman Fleck</i>	A Mechanics Odyssey Through Wars and Crises Around the Globe <i>Gabor Stepan*</i>	The von Karman Institute: a Model for Post-Graduate Education in a Multinational Setting <i>Peter Grognard*, Olivier Chazot, Thierry MAGIN, Jeroen van Beeck</i>

10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM
#M102, Contemporary Meshfree Methods in Computational Mechanics Chairs(s): John Foster, Room: Rowling Hall RRH 3.406				
IT - A Multiresolution Adaptive Wavelet Method for Nonlinear Partial Differential Equations <i>Karel Matous*</i>	A Nonlocal Lattice Particle Method for Coupled Thermomechanical Modeling and Analysis <i>Donglai Liu, Hailong Chen*</i>	Moving Window Techniques to Model Shock Wave Propagation Using the Concurrent Atomistic-Continuum Method <i>Alexander Davis, Vinamra Agrawal*</i>	Modeling the Elasticity of HCP Crystals Using a Novel Nonlocal Lattice Particle Method <i>Di Liu*, Hailong Chen</i>	
#M108, Mechanics of Granular and Geo-Mechanical Systems Chairs(s): Ken Kamrin, Room: AT&T 105				
Crystallization in Cyclically Sheared Frictionless Grains <i>Mark D. Shattuck*, Weiwei Jin, Corey O'Hern, Charles Radin, Harry Swinney</i>	4D Computed Tomography of Granular Force Chains <i>Wei Li*, Ruben Juanes</i>	Investigation of Unsaturated Soil Behaviour by Means of in situ CT Imaging-Experiments <i>Marius Milatz*, Dennis Heinrich</i>	Modeling Multiblock Systems: Computational Analyses Backed by Experiments <i>Jose Andrade, Ares Rosakis, Joel Conte, Jose Restrepo, Vahe Gabuchian, John Harmon, Andres Rodriguez, Arpit Nema, Andrea Pedretti, Ziran Zhou*, Luca Sironi, Marco Andreini, Filippo Dacarro, Davide Bolognini</i>	

TS 13: FRIDAY MORNING, JUNE 24

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<p>#M110, 100 Years of International Collaboration in Mechanics: The Legacy of Theodore von Karman (by invitation only) Chairs(s): Horacio Espinosa, Room: AT&T 30</p>				
<p>Theodore von Kármán and the Mars Helicopter</p> <p><i>Morteza Gharib*</i></p>	<p>Unstable Flow Structures Caused by Polymer Stresses</p> <p><i>Arezoo Ardekani*, Manish Kumar</i></p>	<p>Reflections of One Researcher and Educator in Mechanics, 2022</p> <p><i>Kaushik Bhattacharya*</i></p>	<p>Quantum Turbulence: What is it and How Does It Differ from Classical Turbulence?</p> <p><i>Katepalli Sreenivasan*</i></p>	
<p>#M206, Bio-Inspired Propulsion Chairs(s): Megan Leftwich, Room: Rowling Hall RRH 3.304</p>				
<p>Efficient Biomimetic Swimming Using Elastic Propulsors with Tapered Thickness</p> <p><i>Ersan Demirer, Alexander Alexeev*</i></p>	<p>Effect of Curvature Variations on Flapping Fin Propulsion</p> <p><i>Wim M. van Rees*</i></p>	<p>A Bio-Inspired Flapping Wing Robotic Platform with Twist and Fold Capability</p> <p><i>Xiaozhou Fan*, Alberto Bortoni, Siyang Hao, Sharon Swartz, Kenneth Breuer</i></p>	<p>Spatially Distributed Force Measurement for Small Terrestrial Animals</p> <p><i>Yue Guan*, Madhusadhan Venkadesan</i></p>	
<p>#M208, Cavitation and Bubble Dynamics Chairs(s): Mauro Rodriguez, Room: AT&T Salon D</p>				
<p>Contrast Microbubbles for Ultrasound Imaging, Therapeutics and Tissue Engineering: Pressure Dependent Subharmonics, Jets and Microstreaming</p> <p><i>Kausik Sarkar*</i></p>	<p>Cavitation Damage Mechanism in Stone Dusting During Holmium:YAG Laser Lithotripsy</p> <p><i>Gaoming Xiang*, Georgy Sankin, Derek Ho, Junqin Chen, Pei Zhong</i></p>	<p>Numerical Simulations of Cavitation Bubble Growth and Collapse Near a Viscoelastic Object</p> <p><i>Mauro Rodriguez*, Jean Sebastien Spratt, Spencer Bryngelson, Tim Colonius</i></p>	<p>An Embedded Boundary Finite Volume Method for Laser-Fluid Coupling and Laser-Induced Cavitation</p> <p><i>Xuning Zhao*, Wentao Ma, Kevin Wang</i></p>	<p>Maximum Radius of an Explosively Growing Bubble in a Viscoelastic Medium Subjected to an Ultrasound Wave</p> <p><i>Baudouin Fonkwa Kamga*, Minki Kim, Eric Johnsen</i></p>
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 13: FRIDAY MORNING, JUNE 24

#M217, Dynamics and Instabilities of Flows with Particles Across Length Scales Chairs(s): Sungyon Lee; Eckart Meiburg, Room: AT&T 202				
Key Parameters for Droplet Evaporation and Mixing at the Cloud Edge <i>Johan Fries, Gaetano Sardina, Gunilla Svensson, Bernhard Mehlig*</i>	Force Coupling Method for Particle-Laden Flows and Recent Applications <i>Martin Maxey*, Amanda Howard</i>	Relationships Among Structure, Memory, and Flow in Sheared Disordered Materials <i>Paulo Arratia*, Doug Jerolmack, Larry Galloway</i>		
#M220, Nonlinear Dynamics of Active Fluids and Transition to Active Turbulence Chairs(s): Mike Norton, Room: AT&T 101				
(Very) Strong Correlations in Microswimmer Suspensions <i>Alexander Morozov*, Viktor Skultety, Joakim Stenhammar, Cesare Nardini, Davide Marenduzzo</i>	How Hydrodynamic Interactions Affect the Phase Separation in Active Systems <i>Zhan Ma*, Renato Assante, Cesare Nardini, Joakim Stenhammar, Davide Marenduzzo, Alexander Morozov</i>	Experimental Studies of Active Mixing in Laminar Flows: Swimming Invariant Manifolds <i>Tom Solomon*</i>	Braiding Dynamics in Active Nematics <i>Spencer Smith*</i>	Transitional Turbulence in Active Nematic Channel Flow: Phase Space Geometry and Exact Coherent Structures <i>Caleb Wagner, Mike Norton, Jae Sung Park, Piyush Grover*</i>
#M303, Modeling and Design for Energy Devices Chairs(s): Jonghyun Park, Wei Lu, Room: AT&T Salon E				
IT - Studies on Data-Driven Analysis for Energy System <i>Heeyun Lee*, Suk Won Cha</i>	Electrolyte Channel Design by Physical Model and Machine Learning <i>Tianhan Gao, Wei Lu*</i>	Mechanical-Electrochemical Analysis of Three-Dimensional (3D) Electrode Architectures <i>Jonghyun Park*, Yaqi Zhu, Rahul Panat</i>	Microstructural Design of Structural Battery Electrolyte <i>Reza Pejman, Ahmad Najafi*</i>	
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 13: FRIDAY MORNING, JUNE 24

#M310, Plasticity & Ductile Failure Chairs(s): Edmundo Corona, Room: AT&T 203				
IT - Dynamic Interface Instabilities as a Window into Material Behavior <i>Tracy Vogler*, Travis Voorhees, Brittany Branch, Seth Root, Matthew Hudspeth, Joseph Olles</i>	Experimental and Analytical Studies for Performance Evaluation of High-Temperature Alloys <i>Lucas Maciel de Andrade Lima*, Tasnim Hassan</i>	Strain-Based Reformulation of Spectral Fatigue to Handle Overloads and Localized Elastic-Plastic Deformation <i>Dominic Jarecki*, Arun Srinivasa, Nagaraja Iyyer, Prakash Thamburaja</i>	Combined Effects of Stress Triaxiality and Strain Rate on Mechanical Strength and Ductile Failure Strain of Stainless-Steel Tensile Bars <i>Jie Sheng, Xu Nie, Wei Tong*, Angela Ku, Bo Song</i>	
#M311, Mechanics of Friction, Fracture and Damage in Materials Across Scales Chairs(s): Ottman Tertuliano, Room: AT&T 201				
Combined Friction/Damage Based Cylindrical Microplane Model for Compression Kink Band Failures in Composites <i>Kedar Kirane*, Jing Xue</i>	Optimal Asymmetric Loading Configurations for Extracting Mixed-Mode Cohesive Laws from Interacting Beams <i>Mohammad Ansari*, Rui Huang, Kenneth Liechti</i>	Modeling Impact Response of High Strength Concrete Structures using GraFEA & Experimental Verification <i>Ho Yong Shin*, Prakash Thamburaja, Arun Srinivasa, Junuthula N. Reddy</i>		
#M313, Deformation and Assembly of Materials and Structures at Solid-liquid Interfaces Chairs(s): Baoxing Xu, Room: Rowling Hall RRH 3.216 (Comal)				
IT - Elastocapillarity at Cell-matrix Contacts <i>Sulin Zhang*, Xuechen Shi, Zezhou Liu, Luyi Feng, Chung-Yuen Hui</i>	Polymorphic Textures Driven by Dynamic Elasto-capillarity <i>Sam Tawfick*, Jonghyun Ha, Yun Seong Kim</i>	Assembling 2D Materials to Architectural Structures by Solution Evaporation <i>Qingchang Liu, Baoxing Xu*</i>		
10:15 AM	10:35 AM	10:55 AM	11:15 AM	11:35 AM

TS 13: FRIDAY MORNING, JUNE 24

#M316, Mechanics of Architected Materials Chairs(s): Lucas Meza, Room: AT&T 204			
IT - Reprogrammable Cellular Origami <i>Damiano Pasini*</i>	Continuum Field Theory for the Deformations of Planar Kirigami <i>Paul Plucinsky*, Yue Zheng, Ian Tobasco, Paolo Celli</i>	Modeling of Porous Beams via Variable-Order Fractional Continuum Theory <i>Sansit Patnaik, Mehdi Joka*, Fabio Semperlotti</i>	
#M317, Mechanics of Multifunctional Low-Dimensional Materials Chairs(s): Fatemeh Ahmadpoor, Room: AT&T 106			
IT - Mechanics of Mixed Dimensional Carbon Nanomaterials: Historic Perspectives and Lingering Challenges <i>Mohammad Naraghi*</i>	IT - Strain-engineered Van der Waals Materials for Deformable Electronics <i>Jin Myung Kim*, SungWoo Nam</i>	Fatigue of 2D Hybrid Organic-Inorganic Perovskite <i>Doyun Kim*, Eugenia Vasileiadou, Ioannis Spanopoulos, Mercouri Kanatzidis, Qing Tu</i>	Domain Aggregation and Associated Pore Growth in Lipid Membranes <i>Yue Liu*, Guijin Zou, Huajian Gao</i>
#M322, Multiscale Methods and Mechanics of Soft Matter and Hierarchical Materials Chairs(s): Zhaoxu Meng, Room: AT&T 116			
IT - Understanding Fibrin-Platelet Interactions in Contracting Blood Clots <i>Alexander Alexeev*, Yueyi Sun, David Myers, Wilbur Lam</i>	Understanding the Role of Material Interface on Mechanical Response of a Bioinspired Nanocomposite <i>Xingzi Yang*, Xiaowei Zeng</i>	Atomistic-informed Crystal Plasticity Finite Element Modeling for the Study of Phase Interface Atomic Coherency <i>ibrahim Altarabsheh*, Xiang Chen</i>	Mixed-dimensional Multi-scale Modeling of Adipose Tissue for Subcutaneous Injection: Fluid Flow <i>Yu Leng*, Hao Wang, Mario de Lucio, Hector Gomez</i>

TS 14: FRIDAY AFTERNOON, JUNE 24

01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM
#M105, Physics-Based Simulation & Machine Learning Fusion for Sensor Network Design, Optimization, and Digital Twin Applications Chairs(s): Abhishek Venketeswaran, Room: AT&T 202				
<p>Learning to Solve Bayesian Filtering Problems in Real Time Using Amortized Variational Inference</p> <p><i>Kairui Hao*, Ilias Billionis</i></p>	<p>High Order Sensitivity Analysis of Water Distribution Systems</p> <p><i>Manuel Garcia*, Mauricio Aristizabal</i></p>	<p>A Multi-Fidelity Deep Neural Network Approach to Structural Health Monitoring</p> <p><i>Matteo Torzoni, Andrea Manzoni, Stefano Mariani*</i></p>		
#M108, Mechanics of Granular and Geo-Mechanical Systems Chairs(s): Ken Kamrin, Room: AT&T 105				
<p>Accurate and Efficient Hydro-Mechanical Coupled MPM and its Application in Modeling Small and Large Deformation Geomechanics</p> <p><i>Bodhinanda Chandra*, Ken Kamrin, Kenichi Soga</i></p>	<p>Combining MPM and FVM to Model Air- and Liquid-Sediment Mixtures</p> <p><i>Ken Kamrin*, Aaron Baumgarten</i></p>	<p>Explaining the Micromechanics of the Soil Water Retention Curve Using Multiphase Lattice Boltzmann</p> <p><i>Qiuyu Wang*, Reihaneh Hosseini, Krishna Kumar, Marius Milatz</i></p>		
#M206, Bio-Inspired Propulsion Chairs(s): Mike Plesniak, Room: Rowling Hall RRH 3.304				
<p>Harnessing the Cylinder Wake: Building an Airfoil's Response to Upstream Vorticity</p> <p><i>Morgan Hooper*, Beverley McKeon</i></p>	<p>RoboKril: Pleopod Morphology and Vortex Generation During Drag-Based Metachronal Swimming</p> <p><i>Sara Oliveira Pedro dos Santos*, Yunxing Su, Monica Wilhelmus</i></p>	<p>Mesozooplankton Migration: Turbulent Bio-Mixing as Ecosystem Engineers</p> <p><i>Yunxing Su*, Monica Wilhelmus, Eckart Meiburg, Darcy Taniguchi, Tihomir Kostadinov, Dustin Carroll</i></p>		
01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM

TS 14: FRIDAY AFTERNOON, JUNE 24

#M220, Nonlinear Dynamics of Active Fluids and Transition to Active Turbulence Chairs(s): Piyush Grover, Room: AT&T 101				
IT - Active Polar Liquid Crystals: Rheology, Shear Induced Transitions, and Negative Viscosity <i>Tomer Markovich*, Elsen Tjhung, Michael Cates</i>	Activity Induces Chaos in 3D Active Polar Fluids <i>Abhinav Singh*, Philipp Suhrcke, Ivo F. Sbalzarini</i>	Optimal Control of Polar Active Fluid <i>Saptorshi Ghosh*, Chaitanya Joshi, Aparna Baskaran, Michael Hagan</i>		
#M223, Mechanics and Rheology of Vitrimers Chairs(s): Fardin Khabaz and Ralm Ricarte, Room: Rowling Hall RRH 3.216 (Comal)				
IT - Rate-Dependent Fracture of Vitrimers <i>Franck Vernerey*</i>	Accelerated Dynamics in Glassy Vitrimers Undergoing Stress-Induced Deformation <i>Fardin Khabaz*, Alessandro Perego</i>	Inhomogeneous Rouse theory for Modeling the Linear Viscoelastic Behavior of Unentangled Vitrimer Melts <i>Ralm Ricarte*, Sachin Shanbhag</i>	Solid-State Rheology of High Tg Vitrimers <i>Paolo Edera*, Sélène Chappuis, François Tournilhac, Michel Cloitre</i>	
#M303, Modeling and Design for Energy Devices Chairs(s): Hosop Shin, Jonghyun Park, Room: AT&T Salon E				
IT - Electrochemical-Piezoelectric Mechanism for Dendrite Suppression <i>Wei Lu*</i>	Study on Atomic Layer Deposition (ALD) Coating on Active Material Particles for Lithium-ion Batteries <i>Jonghyun Park*, Yufang He, Yaqi Zhu, Hiep Pham</i>	Analysis of Microstructure Geometric Effects on Electrochemical and Stress Response of Lithium-ion Batteries Using 3D Randomized Microstructures <i>Hosop Shin*, Yoon Koo Lee</i>	Modeling Study of Stress Generation and its Impact on Cell Performance of Multi-layered Electrodes in Lithium-ion Batteries <i>Yoon Koo Lee*, Jonghyun Park</i>	
01:45 PM	02:05 PM	02:25 PM	02:45 PM	03:05 PM

TS 14: FRIDAY AFTERNOON, JUNE 24

#M310, Plasticity & Ductile Failure Chairs(s): Frederic Barlat, Room: AT&T 203				
Validation of Finite Element Models for Puncture of Al 7075 Plates of Various Thicknesses <i>Edmundo Corona*, Carter Fietek, VanGoethem Douglas</i>	Simulation of Impact-driven Failure by Plugging and Spallation Using a Semi-coupled Damage Model <i>Sayyad Qamar*, Amine Benzerga, Nathan Barton</i>	Beyond Beta: Systematic Experimental Investigation of Plastic Heat Generation <i>Amanda Jones*, Thomas Ivanoff, Colin Loeffler, Bo Song, Mark Rodriguez</i>	Beyond Beta: Modeling Plastic Heat Generation <i>Brian Lester*, Brandon Talamini, Wyatt Hodges, Leslie Phinney, Amanda Jones</i>	
#M317, Mechanics of Multifunctional Low-Dimensional Materials Chairs(s): Chenglin Wu, Room: AT&T 106				
IT - Statistical Mechanics of Microscopically Thin Thermalized Structures <i>Andrej Kosmrlj*</i>	Size and Temperature Dependence of Young Modulus of Graphene <i>Fatemeh Ahmadpoor*</i>	Atomistic Mechanisms of Phase Nucleation and Propagation in a Model Two-Dimensional System <i>Fei Shuang*, Wei Gao</i>	Friction Between MXenes and Other Two-Dimensional Materials at the Nanoscale <i>Yanxiao Li*, Chenglin Wu</i>	
#M319, Phase Field Study of Microstructures and Behaviors of Advanced Materials Chairs(s): , Room: Rowling Hall RRH 3.208 (Brazos)				
A Globally Convergent Modified Newton Method for the Direct Minimization of the Ohta--Kawasaki Energy <i>Lianghao Cao*, Omar Ghattas, J. Tinsley Oden</i>	Interaction between Deformation Twinning and Dislocation Slip in Polycrystalline Solids <i>Eric Ocegueda*, Kaushik Bhattacharya</i>	Phase Field Emergent Disconnections in Grain Boundary Migration <i>Brandon Runnels*</i>	A Finite Deformation Theory for Grain Boundary Plasticity Based on Geometrically Necessary Disconnections <i>Himanshu Joshi*, Junyan He, Nikhil Chandra Admal</i>	Mechanics of Electrochemical Strain Microscopy: Phase Field Simulations and Experimental Validations <i>Yunya Liu*, Chihou Lei</i>
#M322, Multiscale Methods and Mechanics of Soft Matter and Hierarchical Materials Chairs(s): Zhaoxu Meng, Room: AT&T 116				
IT - Multiphysics and Multiscale Modeling of Microthrombosis in COVID-19 <i>He Li*, Yixiang Deng, Zhen Li, Ander Dorken Gallastegi, Christos Mantzoros, Galit H. Frydman Galit H. Frydman, George Karniadakis</i>	Long-time Mesoscale Fluid Dynamics Simulation Enabled by a Supervised Parallel-in-time Method <i>Zhen Li*, Ansel Blumers, George Karniadakis</i>			

TS 14: FRIDAY AFTERNOON, JUNE 24