WEDNESDAY 4/7

11:00	**Welcome and Opening Remarks: Ryan Hurley, Conference Co-Chair**			
11:15	**Plenary Lecture: Chiara Daraio,** "Disorder and anisotropy in architected materials with extreme properties"			
12:15	**Break**			
	Session A **Characterization and Modeling of Dynamic Fracture of Composites**	**Session B** **Slip, Twins, and Voids**	**Session C** **Symposium on the Mechanics of Biological and Biomimetic Soft Materials**	**Session D** **Mechanics and Manufacturing of Architected Materials**
12:45 -1:05	Projectile nose effect on failure of fiber reinforced composite strips characterized by reverse impact technique (**J. Gao**, N. Kedir, J. Andes Hernandez, T. N. Tallman, W. Chen)	Void growth during stripping of Li electrodes in solid electrolyte cells (**V. Deshpande**)	Subject-specific 3D Brain Simulations Using Heterogenous, Linear Viscoelastic Material Properties Derived from Magnetic Resonance Elastography (**A. Alshareef**, A. Knutsen, C. Johnson, A. Carass, K.T. Ramesh, J. Prince)	Architectured Tubes under Consideration of Their Manufacturing Process (T. Siegmund, **K. Mahoney**, N.Schaefer)
1:05-1:25	Penetration and branching of dynamic cracks at material interfaces analyzed via a strain rate dependent continuum damage model (**Y. Lam**, K. Kirane)		Development and validation of a three-dimensional, subject-specific human head model using the viscous dissipation-based visco-hyperelastic constitutive framework (**K. Upadhyay**, A. Alshareef, A. Knutsen, C. Johnson, K.T. Ramesh)	Strength of Additively Manufactured Brittle Foams (S. Gaitanaros, S. Bi, **E. Chen**)
1:25-1:45	Plasticity and Fracture Properties of Polystyrene Microspheres in Temperature Controlled Microballistic Testing (**A. Gangineri Padmanaban**, T. W. Bacha, F.s M. Haas, J. F. Stanzione III, J-H. Lee)	On the Role of Texture and Precipitate Orientation in Spall Failure of a Rolled Magnesium Alloy (**D. Mallick**, S. Eswarappa-Prameela, D. Ozturk, J. Lloyd, T. P. Weihs, K.T. Ramesh)	Numerical assessment of brain's biomechanical response to blast-induced global head motion (**S. Sutar**, S. Ganpule)	Modeling and Optimization of Super-Elastic Shape Memory Alloy Bending Dominated Lattice Structures for Kinetic Energy Absorption/Dissipation Using the Finite Element Method (**I. Morrissey**, J. Moore)
1:45-2:05	Heterogenous Brittle Solids under High-Rate Compressive Loading (**S. Braroo**, K.T. Ramesh)	Dynamic shearing resistance of pure polycrystalline metals: Pressure-shear plate impact experiments and extension of dislocation-based modeling to large strains (**B. Zuanetti**, D. J. Luscher, K. Ramos, C. Bolme, V. Prakash)	Numerical assessment of early time wave mechanics inside a surrogate head model resulting from blast-induced loading (**R. Banton**, T. Piehler, N. Zander, R. Benjamin, R. Meozek, O. Petel)	Multimaterial Mechanical Metamaterials with Programmable Response (**J. Mueller**, J. Lewis, K. Bertoldi)
2:05-2:25		Untangling inelasticity and phase transition kinetics in Sn under extreme deformation conditions (**W. Schill**, R. Austin, J. Belof, K. Schmidt, J. Brown, N. Barton)	An investigation of the mechanical response of brain tissue following exposure to pulsed microwaves (**A. Dagro**, J. Wilkerson)	A new machine learning based design methodology for open cell foams as applied to crash energy absorption (**F. Zhu**, R. Zhou, Z. Yang)
2:25-2:45	**Break**			
2:45-4:30	**Poster Session**			

THURSDAY 4/8

11:00	**Plenary Lecture: Fionn Dunne, "**Slip, dislocations and stored energy in microstructurally-sensitive crack nucleation and growth"				
12:00	**Break**				
	Session A **Atomic to Continuum Scale Composite Mechanisms**	**Session B** **Hypervelocity Impact Phenomena**	**Session C** **Slip, Twins, and Voids**	**Session D** **Multiscale Mechanics and Machine Learning for Porous and Particulate Materials**	**Session E** **Processing and Characterization of Hard Ceramics**
12:30 -12:50	Development of a one-dimensional moving window CAC framework to model long-time shock wave propagation (**A. Davis**, V. Agrawal)	Mechanism based Integrative model for projectile impact simulation of materials (**N. Mitra**, K.T. Ramesh)	The Effect of Precipitates and Texture on High Strain Rate Deformation of Magnesium Alloy WE43 (**J. Robson**, A. Platts, M. Lunt)	The Combined Finite-Discrete Element Method Applied to Multiscale Analysis (**E. Rougier**, S. Boyce, E. Knighte, N. Panda, K. Bennett)	Origin, Classification and Effects of Intragranular Boron Carbide Planar Features (**J. W. McCauley**)
12:50-1:10	An Atomistic-to-Continuum Prediction of the Dislocation-Interface Reactions and the Subsequent Structure Changes in Metallic Composites under Deformation (**L. Xiong**)	Influence of Crystal Orientation on Shock Response of Boron Carbide (**A. Adoor Cheenady**, A. Awasthi, G. Subhash)	A Crystal Plasticity Investigation of Grain Size-Texture Interaction in Magnesium Alloys (**B. Ravaji**, S. Joshi)	Damage Modeling for Second Gradient Continua: Granular Micromechanics and Variational Methods (**A. Misra**, L. Placidi, E. Barchiesi, D. Timofeev, V. Maximov)	Properties of high pressure sintered ZrB2, HfB2 and ZrB2-TiB2, ZrB2-SiC composite materials (**T. Prikhna**, A. Lokatkina, R. Haber, M. Karpets, P. Barvitskyi, O. Borymskyi)
1:10 1:30	Atomic Scale Investigation on the Mechanical Behavior of Ultrathin Polymer/Ceramic Multilayers Under Shock Loading (**N. Dewapriya Arachchige**, R. Miller)	Characterizing the Effects of Asteroid Structure on Momentum Enhancement from a Kinetic Impactor (**A. Stickle**, E. Rainey, D. Graninger)	Characterization of 3-D Slip Fields in Deforming Polycrystals (**D. Pagan**, K. Nygren)	The Effect of Fabric on Stability and Wave Propagation in Granular Media (**A. Gupta**, K.T. Ramesh, R. Hurley)	Rapid in-situ fabrication and characterization of silicon doped boron carbide composite with TiB2 addition (**J. Du**)
1:30-1:50	Unraveling the Agglomeration Mechanism of Epoxy Resin in Sizing Solution (**S. Zarrini**, C. Abrams)	Development of Novel High-Rate In-Situ Particle Tracking Diagnostics for Hypervelocity Impacts (**G. Lukasik**, J. Rogers, K. Raj Kota, J. Wilkerson, T. Lacy Jr., W. Kulatilaka)	Phase-field Modeling of Deformation Twinning in Polycrystalline Solids (**E. Ocegueda**, K. Bhattacharya)	Predicting stress fields in composite materials using Convolutional Neural Networks (**A. Bhaduri**, L. Graham-Brady)	High-resolution Characterization of Fracture and Fragmentation of Ballistically Impacted Monolithic Boron Carbide (**C. Marvel**, K. Behler, J. LaSalvia, M-R He, K. Hemker, M. Harmer)
1:50-2:10	Influence of Chemistry and Architecture on the S-Glass/Epoxy Interfaces (**M. Kubota**, S. Chowdhury, J. Deitzel, J. Gillespie, G. Palmese)	Impact Driven Biaxial Fragmentation in Ductile Metals (**G. Simpson**, M. Shaeffer, K.T. Ramesh)	Development of high strength low-alloy (HSLA) magnesium alloy with bake-hardenability (**T.T. Sasaki**, Z. Li, J.Y. Lin, T. Nakata, S. Kamado, K. Hono)	Multilayer perceptron neural networks as multi-variable material models (R. Regueiro, **B. Banerjee**, D. Fox)	Investigations of Anisotropy in the Mechanical Response of B4.9C Single Crystals and Characterization of Quasi-plasticity Mechanisms (**A. Zare**, M-R He, M. Straker, M. Spencer, K. Hemker, J. W. McCauley, K.T. Ramesh)

2:10	**Break**				
	Session A **Atomic to Continuum Scale Composite Mechanisms**	**Session B** **Hypervelocity Impact Phenomena**	**Session C** **Symposium on the Mechanics of Biological and Biomimetic Soft Materials**	**Session D** **Multiscale Mechanics and Machine Learning for Porous and Particulate Materials**	**Session E** **Processing and Characterization of Hard Ceramics**
2;30-2:50	Parametrically Homogenized Continuum Damage Mechanics (PHCDM) Model for Unidirectional Fabric Composites (**X. Zhang**, Y. Xiao, D. O'Brien, S. Ghosh)	Current status of debris protection design standard at JAXA (**K. Nitta**, M. Higashide)	Computational investigation of the effects of varying P-selectin density on cell rolling and bond formation in linear shear flow (**G. Prabhukhot**, R. Banton, C. Eggleton)	Thermodynamic-informed machine learning for solid mechanics (**W. Sun**, N. Vlassis)	Novel routes to process cubic boron nitride and its composite for extreme environments (**C. Hwang**, I. Petrusha, T. Prikhna, M. Ornek, K. Xie, R. Haber)
2:50-3:10	Parametrically Homogenized Continuum Damage Mechanics (PHCDM) Models for woven composites (**Y. Xiao**, S. Ghosh)	Ultra-high-molecular-weight polyethylene as a hypervelocity impact and cosmic rays shielding material for Whipple shield (**J-H Cha**, S. Kumar, S. Kumar, C-G Kim)	Shockwave propagation and attenuation in poly(ethylene glycol) diacrylate hydrogels (**D. Spearot**, K. Luo, G. Subhash)		Formation of phases in B4C-Al system in a wide range of mutual concentrations (**O. Vasiliev**, V. Muratov, V. Garbuz, P. Mazur, V.Kartuzov, R. Haber)
3:10-3:30	A Representative Volume Element (RVE) model for Ultra-High-Molecular-Weight-Polyethylene (UHMWPE) Composites (**D. Kempesis**, L. Iannucci, S. Del Rosso, P. Curtis, D. Pope, P. Duke)	Regional and Local Topography Effects of Hypervelocity Impacts into Rubble Piles (**D. Graninger**, A. Stickle, M. Syal)	Material Characterization and Simulation for a Soft Gel Subjected to Impulsive Loading (**X. Gary Tan**)	History, structure, and stress dependence of local rearrangements in 3D granular media from machine learning (**R. Hurley**, C. Zhai, E. Herbold, S. Hall, N. Albayrak, J. Engqvist)	Correlating Grain Boundary Complexions to Grain Boundary Toughness in Yb-doped Boron Suboxide (**C. Marvel**, A. Leide, K. Behler, J. LaSalvia, R.Todd, M. Harmer)
3:30-3:50	Micromechanical 3-Dimensional Finite Element Modeling of Tensile Failure of Unidirectional Composites (**R. Ganesh**, A.Abu-Obaid, J. W. Gillespie, D. J. O'Brien)	Modeling Lunar Impact Flashes with HyperRISK (**P. King**, J. Wilson, E. Rainey, A. Stickle, J. Cahill, D. Graninger)	Implementation of Microstructure-Based Deformation and Failure Model for Compressive Mechanical Response of Human Skull (S. Alexander, **T. Weerasooriya**)	Machine learned constitutive models for foam mechanics and powder rheology (**D. Bolintineanu**, A. Frankel, C. Hamel, K. Long, S. Kramer)	New impact resistant ceramics based on borides and carbides and computer simulation of the processes of dynamic penetration (**T. Prikhna**, R. Haber, P. Barvitskyi, V. Kushch, A. Neshpor, V. Moshchil)
3:50-4:10	3D Micromechanical Finite Element Modeling of Progressive Tensile, Compressive, and Punch Shear Damage Behavior of Unidirectional Composites (**B. Haque**, R. Ganesh, M. Ali, I. Catagunas, D. O'Brien, J. Gillespie)	Observations of first contact and crater development during hyper-velocity impact (**Y. Kim**, G. Simpson, J. Moreno, M. Shaeffer, K.T. Ramesh)			

FRIDAY 4/9

11:00	**Plenary Lecture: Stuart Leigh Phoenix, "***Puzzling behavior in the impact response of UHMWPE and other fibrous materials and challenges in modeling them"*			
12:00	**Break**			
	Session A **Atomic to Continuum Scale Composite Mechanisms**	**Session B** **Slip, Twins, and Voids**	**Session C** **Symposium on the Mechanics of Biological and Biomimetic Soft Materials**	**Session D** **Particle Based Material Models for Yield, Flow, and Fracture**
12:30 - 12:50	Mesoscale Modeling and Sensitivity Analysis of Heterogeneous and Additively Manufactured Materials (**M. Shakiba**, R. Sepasdar)	Advance in experimental molecular dynamics on deformation in BCC and HCP crystals (**S. X. Mao**, Z. Fang)	High-strain-rate mechanical study of mouse brain tissues originating from local structural anisotropy via seed laser-induced cavitation (**S. Tiwari**, C. Dougan, S. Peyton, J-H Lee)	Coarse-grain simulation study of the nanoscale shear-band deformation mechanism in α-RDX (**S. Izvekov**, J. Brennan, J. Larentzos, B. Rice)
12:50-1:10	Dynamic Shearing Resistance of an Energetic Material Simulant: Sucrose (**P. Malhotra**, T. Jiao, R. Clifton, P. Guduru, D. Henann)		Measurement of Brain Deformations in Human Surrogate Head under Impact Loading (**A. Singh**, S. Ganpule)	Modeling loading and fragmentation in compacted granular systems (**J. Clemmer**, D. Bolintineanu, J. Lechman)
1:10-1:30	Reactive Molecular Dynamics Study on Mechanical Properties of S-glass (**J. Yeon**, S. Chowdhury, J. Gillespie)	Dislocation network evolution in tantalum under dynamic compression (**R. Austin**, N. Bertin, S. Aubry, N. Barton)	Porcine model to investigate strain induced changes to neuronal tissues (**H. Thomson**, B. Hoffe, A. Mazurkiewicz, R. Banton, M. Hollahan, O. Petel)	Parameter-free prediction of amorphous plasticity based on nonaffine lattice dynamics (**I. Kriuchevsyi**, A. Zaccone, T. Sirk)
1:30-1:50	Developing strain rate dependent mixed-mode traction law for the glass fiber-epoxy interphase (**S. Chowdhury**, R. Prosser, J. Gillespie)	Dislocation drag in metals: dependence on velocity, temperature, density, and crystal geometry, and its effect on material response (**D. N. Blaschke**, L. Burakovsky, A. Hunter, D.J. Luscher, D. L. Preston)	A novel intracranial strain measurement for helmet performance evaluation (**J. Rovt**, S. Xu, S. Dutrisac, S. Ouellet, R. Banton, O. Petel)	Modeling granular material dynamics and its two-way coupling with moving solid bodies using a continuum representation and the SPH method (**W. Hu**, D. Negrut)
1:50-2:10	A Multiscale Approach to Modeling Composite Fracture (**C. Meyer**, B. Haque, D. O'Brien, J. Gillespie)	Dynamic crystal plasticity modeling of single crystal tantalum and validation using Taylor cylinder impact tests (**T. Nguyen**, S. J. Fensin, D.J. Luscher)	Improved methods for observing internal deformation of brain during impact events (**S. Dutrisac**, J. Rovt, A.Post, H. Frei, T. B. Hoshizaki, O.Petel)	TBD (**T. O'Connor**)
2:10-2:30	**CLOSING REMARKS / CONFERENCE ADJOURN**			