WEDNESDAY 4/1

8:00	**Registration and Breakfast – Atrium**			
8:45	**Welcome and Opening Remarks: Lori Graham-Brady – Regatta Ballroom**			
9:00	**Plenary Lecture: Amine Benzerga – Regatta Ballroom**			
10:00	**Coffee Break – Atrium**			
10:30	**Plenary Lecture: Fionn Dunne, Slip, dislocations and stored energy in polycrystal crack nucleation and growth – Regatta Ballroom**			
11:30	**Panel Discussion: Shailendra Joshi (session chair) - Regatta Ballroom**			
12:00	**Lunch – Atrium**			
	Regatta A ***Mesoscale Damage, Plasticity, and Fracture (David Walters, Nitin Daphalapurkar)***	***Regatta B*** ***Imaging of complex dynamic behavior of materials (Jonathan Lind, David Bober)***	***Regatta C*** ***Multiscale Models and Experiments for Energetic Materials (Kasra Momeni)***	***Surgeon Room*** ***Experimental and Computational Investigations on Fracture and Fragmentation of Ceramics (Ghatu Subhash)***
1:00-1:20	On Crystallographic and Material Hardening Aspects in Ductile Damage of Hexagonal Materials (**S. P. Joshi**)	On the collapse of spherical voids in solids during shock-cavity interaction (**D. Eakins**, E. Escauriza, D. Chapman, A. Rack)	Towards modeling shear localization in high explosive crystals (**M. Nelms**, M. Kroonblawd, R. Austin)	A Unified Analytical Model for the Dynamic Response of Armor Ceramics to Impact and Penetration (**S. Bavdekar**, G. Subhash, S. Satapathy)
1:20-1:40		Dynamic Interface Instabilities as a Window into Material Behavior (**T. Vogler**, B. Branch, S. Root, M.Hudspeth, J. Olles)	Mesoscale Mechanics of Energetic Materials (**K. Ramos**, F. Addessio, C. Bolme, M. Cawkwell, D.J. Luscher, C. Meredith)	Influence of Crystal Orientation on Shock Response of Boron Carbide (**A. Adoor Cheenady**, M. DeVries, A. Awasthi, G. Subhash)
1:40-2:00	Damage evolution around shear loaded micro-structural inter-void ligaments (**S. Chen**, S. Osovski)	Characterization of the transient and steady-state simple shear response of soft materials under high strain rates (**K. Upadhyay**, K. Luo, G. Subhash, D. Spearot)	Measuring the Mechanical Behavior of Single Crystal Explosives and PBX Formulations Using a Mini-Kolsky Bar (**C. Meredith,** D. Casem, C.Liu, B.Morrow, C. Cady, K. Ramos)	High-resolution Characterization of Fracture and Fragmentation of Ballistically Impacted Monolithic Boron Carbide (**C. Marvel**, K. Behler, J. LaSalvia, M. Harmer)
2:00-2:20	Micro-Mechanical analysis of MDCM with Consideration of Active Mono-slip and Continuum Dislocations (**T. T. Kasa**)	Development of a Multi-Energy Flash Computed Tomography Diagnostic For 3-Dimensional Imaging of Microsecond Timescale Events (**M. B. Zellner**, K. Champly)	Effects of nano-inclusions on the thermomechanical behavior of PBX (**J. Wilkerson**, B. Ravaji, E.Iglesias)	Yield surface of different polymorphs of single crystal Silicon Carbide (**N. Mitra**, KT Ramesh)
2:20-2:40	Mesoscale anisotropic fracture propagation under fatigue loading (**V. Agrawal**, B. Runnels)	In-Situ Studies of Dynamic Deformation of Metals at Microscale; From Mechanics of Impact to Physics of Bonding and Erosion (**M. Hassani**, D. Veysset, X. Wang, K. Nelson, C. Schuh)	Electrochemical Microplasma Synthesis of Nanocomposite Energetic Materials (**C. Wllson**, W. Clower, J. Joffiaon, K. Seetala J. Wier)	Laser-Driven Projectiles for Ceramic Armor Characterization (**D. Mallick**, D.I Magagnosc)
2:40-3:00	Mechanism-based modeling of deformation and failure of quasi-brittle materials under dynamic	Real-time observation of Impact Damage in Coated Silicon Carbide (SiC) (**N. Kedir**, C. Kirk, J. Gao, T. Sun, F. Kamel, W. Chen)		Incipient Fracture of Ceramics Under Impact (**B. E. Schuster**, A. Tonge, T. Scharf, P. Jannotti, N. Lorenzo)

	multiaxial loading (**W. Li**, KT Ramesh, A. Tonge)			
3:00-3:30	**Coffee Break – Atrium**			
	Regatta A ***Mesoscale Damage, Plasticity, and Fracture (David Walters, Nitin Daphalapurkar)***	***Regatta B*** ***High rate multiscale mechanics of particulate materials and soils (Rich Regueiro, David Fox)***	***Regatta C*** ***Computational and Experimental Analysis of the Behavior in Advanced Alloys under High Strain-Rate Deformation (Liming Xiong, Timothy Germann, Cyril Williams)***	***Surgeon Room*** ***Processing and Characterization of Ceramics Used in Extreme Conditions (Rich Haber)***
3:30-3:50	Failure Evolution and Mechanisms in Additively Manufactured Stainless Steel 316L Under Dynamic Loading Conditions (**K. Koube**, K. Bertsch, G. Kennedy, D. Thoma, J. Kacher, N. Thadhani)	Quantifying Kinematics During High-Strain-Rate Loading of Granular Materials (**A. Gupta**, KT Ramesh, R. Hurley)	Atomic-level deformation of CuxZr100-x metallic glasses during shock compression (**D. Spearot**, P. Wen, B. Demaske, S. Phillpot)	Low-pressure processing of cubic boron nitride composites for extreme environments (**C. Hwang**, M. Örnek, K. Xie, E. Wuchina, R.Haber)
3:50-4:10	Effect of fatigue damage on the Hugoniot elastic limit and spall response of alpha Fe (**S.Turnage**, J. Indeck, C. Williams, K. Hazeli)	Developing a UFLSC Computational Framework for Parallel Computing of Particle-shape-captured DEM-CFD Interaction and Granular Stress Wave Propagation in Soil Buried Explosion (**B. Yan,** R. Regueiro)		Growth and characterization of high purity zone-refined boron carbide single crystals by floating zone method (**M. Straker**)
4:10-4:30	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)	Three-dimensional Discrete Element Method parallel computation of Cauchy stress distribution over granular materials (**R. Regueiro**, B. Yan)	Mechanical Behavior and Microstructural Evolution of TRIP, TWIP, and Slip Multi-Phase Steels (**C. Meredith**, L. Johnson, D. Field, C. Hornbuckle, T. Walter, A. Khan)	Studying Amorphization in Rhombohedral Boron-Based Materials (**M. C. Schaefer**, R. Haber)
4:30-4:50	Localization limiters and dynamic crack branching in brittle fracture (**K. Kirane**, T. Abduliah)	Modeling granular fragmentation in compacted systems (**J. Clemmer**, D. Bolintineanu, J. Lechman)	Effect of strain rate and pressure on the strength of A6 magnesium alloy (**S. Ravindran**, V. Gandhi, M. Mello, G. Ravichandran)	An alternative method for processing Si-doped boron carbide (**B. Yang**, C. Huwang, R. Haber)
4:50-5:10	Mott-Grady Unloading Waves and the Ductile Fragmentation for Metallic Materials (**F. Zhou**, Y. Zheng,)	Mechanical and Microstructural Characterization of the Dynamic Granular Flow of an Advanced Ceramic (**A. Sun**, J. LaSalvia, KT Ramesh)	The anomalous behavior of microstructurally stable bulk NC Cu-3at.%Ta alloy shock compressed to 34 GPa (**C. Williams**)	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, A. Maystrenko)

5:10-5:30	A damage model for HCP materials based on the growth of twins and microcracks under high-rate compression (**N. Daphalapurkar**, D. J. Luscher, W. Blumenthal, A.I Hunter)		Concurrent Atomistic-Continuum Simulation of the Dislocation-Interface Reactions and the Subsequent Structure Changes in Alloys under High Strain-Rate Deformation (**L. Xiong**)	Origin, Classification and Effects of Intra-granular Boron Carbide Planar Features (**J. W. McCauley**)
5:45 7:15	**Poster Session / Reception – Atrium**			

THURSDAY 4/2

8:00	**Thank you breakfast for Symposium Organizers – Stevedore's Meeting Room**			
8:30	**Breakfast – Atrium**			
9:00	**Plenary Lecture: Leigh Phoenix – Regatta Ballroom**			
10:00	**Coffee Break – Atrium**			
10:30	**Plenary Lecture: Daniel Hanoch Wagner – Regatta Ballroom**			
11:30	**Panel discussion: Jack Gillespie (session chair) – Regatta Ballroom**			
12:00	**Lunch – Atrium**			
	Regatta A ***Uncertainty quantification, stochastic modeling and machine learning for materials (Jaroslaw Knap, Lori Graham-Brady, Michael Shields)***	***Regatta B*** ***Slip, Twins, and Voids-V (Shailendra Joshi, Justin Wilkerson, Jeffrey Lloyd)***	***Regatta C*** ***Atomic to Continuum Scale Composite Mechanisms: Experiments and Modeling Investigating Multiscale Mechanical and Damage Response of Composites and Their Constituents (Christopher Meyer, Bazle Haque, Sanjib Chowdhury)***	***Surgeon Room*** ***High-rate Loading of Biological Materials (Amy Dagro, Reuben Kraft)***
1:00-1:20	Identification of Geometric and Material Parameters of Hyperelastic Solids with Physics-Informed Neural Networks (**E. Zhang**, G. Pang, M. Dao, G. Karnidakis)	Dynamic interactions between dislocations and twin in Mg: experiments, simulations and theory (**F. Wang**, R. McCabe, C. Barrett, J. El-Awady, L. Capolungo, S. Agnew)	Impact response of Dyneema®HB26 curved laminates (**S. Del Rosso**, L. Iannucci, P.T. Curtis, D. Kempesis, P. Duke, D. Pope)	Investigating the Relationship between Head Kinematics and Brain Tissue Response in Traumatic Brain Injury (**R. Carlsen**)
1:20-1:40	Rigorous Uncertainty Quantification and Safe Design with Application to Material Uncertainties (**X. Sun**, T. Kirchdoerfer, M. Ortiz)		A Representative Volume Element (RVE) model for Ultra-High-Molecular-Weight-Polyethylene (UHMWPE) Composites (**D. Kempesis**, L. Iannucci, KT Ramesh, P. T. Curtis, D. J. Pope, P. W. Duke)	Hydrogen Bonding – Its unsurpassed role in natural and synthetic polymers (**M. Kolel-Veetil**)
1:40-2:00	Modelling and Bayesian model calibration of inelasticity and anelasticity in ramp-driven loading	Dislocation-Obstacle interactions: the influence of obstacle size, shape, and	New Mesoscale Computer Approach to Impact on Dyneema Hard Armors (**S. Chocron**, J. Walker, A. Carpenter)	Simulation of Harmonic Shear Waves in the Human Brain and Comparison with

	of Tantalum (**W. Schill**, N. Barton, R. Austin, J. Brown)	distribution on the Orowan bypass stress. (**B. A Szajewski**, J. Crone, J. Knap)		Measurements from Magnetic Resonance Elastography (**N. Daphalapurkar**)
2:00-2:20	Stochastic perturbation of a 2D brittle fracture model (**J.A. Christen**, L. Blanco-Cocom, M. Capistran)	Effect of Dislocation Emissions on Localized Lattice Rotation and Residual Stress Under Fatigue Loading (**R. Goswami**, C. S. Pande)	Initiation of Mesoscale Interfacial Debonding by Wave Propagation in a Woven Composite (**C. S. Meyer,** B. Haque, D. O'Brien, J. Gillespie)	Simulation for Material Constitutive Model Validation through Backface Deformation and Fracture Patterns of the Human Skull (**T. Weerasooriya**, S. Alexander)
2:20-2:40	Physical-informed Neural Network for solving forward and inverse problems with phase-field models (**M. Yin**, X. Zheng, G. Karniadakis)	Dislocation network evolution in tantalum under dynamic compression (**R. Austin**, N. Berlin, S. Aubry, N. Barton)	Stress field prediction for composite materials using deep learning (**A. Bhaduri**)	An investigation of the mechanical response of brain tissue following exposure to pulsed microwaves (**A. Dagro**)
2:40 3:00	Implications of Statistical Spread to Experimental and Simulation Analysis in a Novel Miniature Kolsky Bar (**T. Hannah**, R. Kraft, S. Ellis)	High strain-rate deformation of single crystal titanium under shear (**N. Mitra**, KT Ramesh)		Closed-form solutions for comparing heating-induced and Lorentz-force-induced stress waves generated in biological material by an electromagnetic plane wave (**J. McDonald**, A. Dagro, S. Satapathy)
3:00	**Coffee Break – Atrium**			
	Regatta A ***Uncertainty quantification, stochastic modeling and machine learning for materials (Jaroslaw Knap, Lori Graham-Brady, Michael Shields)***	***Regatta B*** ***Slip, Twins, and Voids-V (Shailendra Joshi, Justin Wilkerson, Jeffrey Lloyd)***	***Regatta C*** ***Atomic to Continuum Scale Composite Mechanisms: Experiments and Modeling Investigating Multiscale Mechanical and Damage Response of Composites and Their Constituents (Christopher Meyer, Bazle Haque, Sanjib Chowdhury)***	***Surgeon Room*** ***High-rate Loading of Biological Materials (Amy Dagro, Reuben Kraft)***
3:30-3:50	Learning Input-Output Maps of solid materials (**B. Liu**, K. Bhattacharya, N. Kovachki, A. Stuart)	Relating microstructure to failure initiation using a multiscale electron microscopy approach (**J. Kacher**, K. Koube, Y. S. Yoo, N.Thadhani)	An Adaptive Quasi-Continuum Approach for Modeling Fracture in Networked Materials: Application to Modeling of Polymer Networks (**A. Elbanna**, A. Ghareeb)	Helmet protection for blast-induced axonal injury (**R. Kraft,** R. Menghani)
3:50-4:10	Uncertainty quantification for for strain softening models of brittle media. (**G. Simpson**, J. Troy)		Mechanics of filled rubbers under hydrostatic pressure reveals the role of the glassy bridges (**J. Champagne**, S. Cantournet, K. Lehorju, H. Montes, F. Lequeux)	Implementation of Microstructure-Based Deformation and Failure Model for Compressive Mechanical Response of Human Skull (**T. Weerasooriya**, S. Alexander)
4:10-4:30	Model Reduction for Input-Output Maps (**N. Kovachki**, A. Stuart, K. Bhattacharya)	Laser driven spall in a model binary magnesium alloy (**D. Mallick**)	Influence of Chemistry and Architecture on the S-Glass/Epoxy Interfaces (M. Kubota, **S. Chowdhury,** J. Deitzel, G. Palmese, J. Gillespie)	A Novel Apparatus Generating Complex Pressure Loadings for Traumatic Brain Injury Experiments (**S. Vidhate**, R. Mejia-Alvarez, A. Willis)

4:30-4:50	Quantification of Uncertainties within Machine Learning pipelines for Materials Modeling Applications (**A. Olivier**, M. Shields, L. Graham-Brady)	Pre-twinned Magnesium for Improved Ballistic Performance (**D. Magagnosc**, J. Ligda, P. Jannotti, J. Lloyd)	Unraveling the Agglomeration Mechanism of Epoxy Resin in Sizing Solution (**S. Zarrini**, C. Abrams)	Effects of Strain Concentrations within the Neocortex of an Ex Vivo Porcine Brain Tissue Model (**O. Petel**, A. Mazurkiewicz, B. Hoffe, R. Banton, T. Piehler, M. Holahan)
4:50-5:10	Data Driven Governing Equations Recovery with Deep Neural Networks (**D. Xiu**)	Probing failure of magnesium using a hybrid experimental-computational approach (**J. Lloyd**)	Parameterization of ReaxFF Potential of Al/Si/O/Mg interaction for S-glass using Artificial Neural Network assisted Genetic-Algorithm (**J. Yeon**, C. Daksha, S. Chowdhury, A. van Duin, J. Gillespie)	Transient state rheological behavior of poly(ethylene glycol) diacrylate hydrogels at high shear strain rates (**K. Luo**, K.Upadhyay, C. Wangari, G. Subhash, D, Spearot)
5:10-5:30	Topology Optimization for Impact (**A. Akerson**, K. Bhattacharya)	Potential Implications of Texture-Anisotropy Linkages on Failure of Hexagonal Materials (**S. P. Joshi**, S. Baweja, R.Perez, P. Indurkar)	Molecular Level Modeling of Fiber-Epoxy Interphase with Monolayer Silane (**S. Chowdhury**, R. Prosser, T. Sirk, J. Gillespie)	An Overview of Damage Mechanics and Modeling for CavityForming Soft Material Impacts (**Z. Hertel**, S. Schumacher, R. Kraft)
6:00	**Reception – Atrium**			
6:30	**Conference Banquet** **Regatta Ballroom**			

FRIDAY 4/3

8:30	**Breakfast – Atrium**			
9:00	**Plenary Lecture and Discussion: James Guest - Regatta Ballroom** **Lori Graham-Brady (session chair)**			
10:00	**Coffee Break– Atrium**			
	Regatta A ***Data Driven Insights to Material Behavior and Design (David Elbert, Shawn Coleman, Brian Schuster)***	***Regatta B*** ***Novel Techniques for Dislocation Structure Characterization and Modeling (Sean Agnew, Benat Gurrutxaga-Lerma)***	***Regatta C*** ***Atomic to Continuum Scale Composite Mechanisms: Experiments and Modeling Investigating Multiscale Mechanical and Damage Response of Composites and Their Constituents (Christopher Meyer, Bazle Haque, Sanjib Chowdhury)***	***Surgeon Room*** ***Adiabatic Shear Localization in High-Performance Material Systems (Laszlo Kecskes, Qiuming Wei, Fenghua Zhou)***
10:30-10:50	Accelerated Discovery of Armor Ceramics via High-Throughput Experimentation and Data Driven Ballistic Testing (**M. Golt**)	Atomistic and continuum level investigation of slip transfer in cubic metals (**B. Gurrutxaga-Lerma**)	Reverse-ballistic impact study on the deformation and failure of fiber reinforced polymer composite strips (**J. Gao**, Z. Guo, J. Wang, J. Gao, G. Palmese, W. Chen)	The Roles of Adiabatic Shear Mechanisms in Ballistic Impacts (**L.S. Magness, Jr.)**
10:50-11:10	Workflow and visual analysis for XFEL shock physics experiments using Cinema:Bandit (**C. Bolme**, D. Orban, D. Banesh, C. Biwer, A. Biswas, D. Rogers)	Coarse Grained Density Functional Theory and defect interactions in materials (**S. Ghosh**, K. Bhattacharya)	Parametrically Homogenized Continuum Damage Mechanics (PHCDM) Models for woven composites (**Y. Xiao**, X. Zhang, S. Ghosh)	Adiabatic shear as the primary failure mode of a number of Magnesium alloys (**Q. Wei**, J-H. Shen, J. Li, P. Krishnan L. Kecskes)
11:10-11:30	Micro-ballistic characterization of extreme collective dynamics of nanomaterials (**J-H. Lee**)	Virtual Diffraction Analysis of Dislocations and Dislocation Networks (**L. Capolungo**, D. Bamney, A. Tallman, D. Spearot)	Parametrically Homogenized Continuum Damage Mechanics (PHCDM) Model for Unidirectional Fabric Composites (**X. Zhang**, S. Ghosh, D. O'Brien)	Adiabatic Shear Failure of Titanium: An In-situ Experiment Study (**Y. Guo**, Q. Ruan)
11:30-11:50	High-Performance Computing in Atomistic Simulations Using Artificial Neural Networks (**V. Yamakov**, E. Glaessgen, Y.Mishin)	Automated characterization of dislocation 3D structure and dynamics using electron microscopy (**F. Wang**, E. Yao, J. C. Stinville, D. Weygand, T. Pollock, D. Gianola)	3D Micromechanical Finite Element Modeling of Progressive Tensile and Punch Shear Damage Behavior Unidirectional Composites (**B. Z. Haque**, R. Ganesh, M. Ali, I.Catgunas, D. O'Brien, J. Gillespie)	On adiabatic shear banding in high speed machining (**L. Dai**)
11:50-12:10	Physically informed neural network (PINN) potentials with applications to silicon and germanium systems (**J. Hickman**, Y. Mishin, F. Tavazza, G. Purja Pun, V. Yamakov)	Grain-by-grain in-situ synchrotron x-ray diffraction measurements of polycrystalline metal deformation: Case study of a metastable beta Ti alloy, TIMETAL 18 (**S. Agnew**, J.J. Bhattacharyya, D.C. Pagan, S.D. Nair G. Farkas)	Micromechanical 3-dimensional Finite Element modeling of tensile failure of unidirectional composites (**R. Ganesh**, J. Gillespie, D. O'Brien)	High Strain Rate Deformation of Magnesium Alloys under Elevated Temperatures (**M. Kang**, C. Williams, J. Lloyd, KT Ramesh)

12:10-12:30	Characterizing Microstructural-Mechanical Response Relations in Silicon Carbide Grain Boundaries Using Machine Learning and High-Throughput Atomistic Techniques (**D. Montes de Oca Zapiain**, M. Guziewski, S. Coleman, M.Z Hossain R. Dingreville)	Acoustic emission measurements during in situ scanning electron microscopy experiments of Ni microcrystals (**M. Omar**, J. El-Awady)	Effect of Microstructure and Strain-rate on the Out-of-plane Compressive Response of UHMWPE Composites (**J. Parker**, KT Ramesh)	Coarse-grain simulation study of the shear-band deformation mechanism in energetic molecular crystals (**S. Izvekov**, P. Lafond, J. Brennan, J. Larentzos)
12:30	**Lunch – Atrium**			
1:30	**ADJOURN**			