

WEDNESDAY 4/3

8:00	Registration and Breakfast – Annapolis Atrium			
8:45	Welcome and Opening Remarks: Lori Graham-Brady – Regatta Ballroom			
9:00	Plenary Lecture: Dr. Benji Maruyama, “Autonomous Research Systems Applied to Carbon Nanotube Synthesis” – Regatta Ballroom			
10:00	Coffee Break – Annapolis Atrium			
10:30	Plenary Lecture: Prof. Paulette Clancy			
11:30	Panel Discussion - Regatta Ballroom			
12:00	Lunch – Annapolis Atrium			
	Regatta A Architected Materials: Design, Fabrication and Characterization (Stavros Gaitanaros, Jamie Guest, Jordan Raney)	Regatta B Analytical and numerical methods for upscaling of grain/particle mechanics (Kane Bennett, Duan Zhong Zhang)	Regatta C Impact Matters: KT Ramesh's 60th Birthday Symposium (Shailendra Joshi, Jamie Kimberley, Leslie Lamberson, Emily Retzlaff, Justin Wilkerson)	Windjammer Ceramic in Extreme Environments: Processing and Properties (Rich Haber)
1:00-1:20	Efficient Multiscale Design and Fabrication of Continuous Fiber Reinforced Composites (N. Boddeti , D. Rosen, K. Maute, M. Dunn)	A micromorphic filter for determining stresses from poly-crystalline elastoplastic DNS (R. Regueiro , N. Miller, F. Shahabi, J. Bishop)	Shock Wave Propagation in Particulate Composites (G. Ravichandran)	Growth, characterization, and preparation of single crystal boron carbide (M. Straker , MVS Chandrashekhar)
1:20-1:40	Design, manufacturing, and testing of metamaterials for seismic vibration control of structures (N. Bonessio)		Biomechanics of Primary Blast Injury to the Human Eye (V. Nguyen)	Microstructural Investigation of Amorphization Resistant Silicon and Boron-doped Boron Carbides (C. Marvel , B. Yang, V. Domnich, J. LaSalvia, R. Haber, M. Harmer)
1:40-2:00	Concurrent Optimization of Structural Topology and Infill Properties with a CBF-Based Level Set Method (S. Chen , X. Gu, L. Jiang)	Experimental Studies of Micro-Macro Relations and Length Scales in Granular Materials (R. Hurley , C. Zhai, E. Herbold, S. Hall)	Fracturing in planetary science: contributions by Dr. Ramesh (O. Barnouin)	Structure and properties of aluminum dodecaboride and boron carbide-based ceramics, modeling and tests of ballistic characteristics (T. Prikhna , P. Barvitskiy, R. Haber, V. Domnich, B. Karpinos, V. Kulish)
2:00-2:20	Architecting Surface Features for Nonlinear Response (R. Ghosh , H. Ali, H. Ebrahimi)	A meta-modeling machine game for automated generation of cohesive zone model (W. Sun , K. Wang)	Breaking asteroids and comets in the sunlight (M. Delbo)	Onset Conditions to Induce Amorphization of Doped Boron Carbides in a Diamond Anvil Cell (M. Schaefer , R. Haber, V. Domnich)
2:20-2:40	Transforming cellular structures via active materials (J. Mueller , D. Kokkinis, K. Bertoldi, J. Lewis)	Modeling Interfaces in Diamond-SiC (S. Coleman , M. Guziewski, J. Synowczynski-Dunn, C. Carlin, P. Goins, R. B. Leavy, J. Clayton)	Extremely Fine Extreme Materials (K. Hemker)	Suppression of Amorphization in Boron Carbide: Silicon or Boron doping? (B. Yang , C. Marvel, V. Domnich, J. LaSalvia, R. Haber)
2:40-3:00	Large-scale topology optimization for architected materials design (H. Lee , J. Guest)	On self-consistent homogenization of porous bonded particle assemblies (K. Bennett , D. Luscher)		Influence of Microstructure Variability on Mechanical Variability in Advanced Ceramics (J. Hogan , B. Koch, C. Lo, H. Li, T. Sano)

3:00-3:30	Coffee Break – Annapolis Atrium			
	Regatta A Machine Learning Techniques for Accelerated and Intelligent Materials Design and Discovery (Jaafar El-Awady, Mohammad H. Rafiei)	Regatta B Analytical and numerical methods for upscaling of grain/particle mechanics (Kane Bennett, Duan Zhong Zhang)	Regatta C Slip, Twins, and Voids – IV (Jeffrey T. Lloyd, Shailendra Joshi, Justin Wilkerson)	Windjammer From Atoms to Armor: multiaxial dynamic impact mechanics of ballistic fibers and composites (Sanjib Chowdhury, John W. Gillespie Jr, Subramani Sockalingam, Tusit Weerasooriya)
3:30-3:50	Development and Application of Automated Image Segmentation for Time Resolved Ballistics Data (D. Elbert, N. Carey, A. Rachidi, C. Krill, B. Schuster)	Intergranular Mechanics of Metallic Ductile Damage Under Dynamic Loading Conditions (C. Bronkhorst)	The role of faceting in twin-twin interactions (C. Barrett)	Capturing Subtleties of the Impact Behavior of Dyneema Hard Armors (S. Chocron, J. Walker, A. Carpenter)
3:50-4:10	Designing neural network models of mechanical variability due to microstructural features (R. Jones, A. Frankel, C. Alleman)	Modelling the Transition from Fracture to Granular Flow using Particle-Based Simulations (J. Clemmer, M. Robbins)		Temperature measurements during tensile testing Dyneema® fibres and composites (S. Del Rosso, D. Kempesis, P. Curtis, P. Duke, D. Pope)
4:10-4:30	Machine Learning-Based Reduced Order Crystal Plasticity Modeling and Microstructure Representation for ICME Applications (S. Niezgodna, M. Yuan, B. Meredig, S. Paradiso, Y. Wang, D. Dimiduk)	Parameter-free prediction of the dynamic mechanical response of polymer glasses with Non-Affine Lattice Dynamics (NALD) (A. Zaccone, T. Sirk, R. Elder, V. Palyulin, C. Ness, R. Milkus)	Dislocation drag in metals: dependence on velocity & crystal geometry (D. Blaschke)	A preliminary framework for determining the inelastic strike-face mass fraction of soft armor targets (Z. Guo, W. Chen)
4:30-4:50	A Machine Learning Approach for Estimating the Stress Field and Dislocation-Dislocation Interactions in Two-Dimensional Discrete Dislocation Dynamics (M. Rafiei, J. El-Awady)	Twinning-Detwinning in Shock Compressed UFG AMX602 Magnesium via Time-Resolved In-Situ Synchrotron X-Ray Diffraction (C. Williams)	Visualisation of spall failure in magnesium alloy AZ31B using X-ray phase contrast imaging (D. Chapman, L. Farbaniec, D. Eakins)	Impact of AK47 ammunition on Dyneema® HB26 – validating a numerical model against experiments (M. Hazzard, T. Lässig, U. Heisserer, W. Riedel, H. van der Werff)
4:50-5:10	Statistical learning for small data materials challenges: Solid lithium-ion conductors for batteries (E. Reed)	Using a single velocity field within MPM to model fracture and multi-body interactions (C. Long, G. Moutsanidis)	Adiabatic shear localization and thermal softening in hexagonal close-packed metals under high strain rate loading (L. Farbaniec, D. Chapman, M. Zhou, D. Eakins)	A novel progressive failure constitutive model for UHMWPE composites (D. Kempesis, L. Iannucci, S. Del Rosso, P. Curtis, P. Duke, D. Pope)
5:10-5:30		Ensemble Phase Average as an Upscaling Method (D. Zhang)	Atomic Scale Modeling of Deformation Twinning in Polycrystalline Mg Microstructures at High Strain Rates (S. Galitskiy, A. Dongare, G. Agarwal)	Inter-fibrillar interactions in UHMWPE fibers (S. Chowdhury, S. Sockalingam, J.W. Gillespie Jr.)
5:45	Poster Session / Reception, sponsored by Nanomechanics, Inc. – Annapolis Atrium			
7:15	Dinner on your own			

THURSDAY 4/4

8:00	Thank you breakfast for Symposium Organizers – Mainsail Room			
8:30	Breakfast – Annapolis Atrium			
9:00	Plenary Lecture: Dr. Jonathan D. Almer, “Watching Microstructures Evolve with High-Energy X-rays” – Regatta Ballroom			
10:00	Coffee Break – Annapolis Atrium			
10:30	Plenary Lecture: Prof. Gilbert Collins, “Extreme matters, pressure to explore new worlds and exotic solids” – Regatta Ballroom			
11:30	Panel discussion – Regatta Ballroom			
12:00	Lunch – Annapolis Atrium			
	Regatta A Uncertainty quantification and stochastic modeling of materials (Lori Graham-Brady, Michael Shields, Jaroslaw Knap)	Regatta B Experimental and Computation Characterization of Dynamic Behavior of Advanced Ceramics (Ghatu Subhash)	Regatta C Impact Matters: KT Ramesh's 60th Birthday Symposium (Shailendra Joshi, Jamie Kimberley, Leslie Lamberson, Emily Retzlaff, Justin Wilkerson)	Windjammer Slip, Twins, and Voids – IV (Jeffrey T. Lloyd, Shailendra Joshi, Justin Wilkerson)
1:00-1:20	Bayesian Uncertainty Quantification and Information Fusion in CALPHAD-based Thermodynamic Modeling (R. Arroyave, T. Duong, S. Ghoreishi, D. Allaire)	Reactive molecular dynamics simulations of shock of boron carbide (M. DeVries, A. Awasthi, G. Subhash)	Controlling the Incident Wave Profile in Torsional Kolsky Bar (W. Chen, B. Claus)	Retained Austenite Stability in Transformation Induced Plasticity Steels (E. De Moor)
1:20-1:40	Robust concurrent optimization of material and device (K. Bhattacharya)	Dynamic behavior of granulated boron carbide (M. Cil, R. Hurley, L. Graham-Brady)	Some History and Highlights from Twenty Years of Collaborations with Professor KT Ramesh (J. McCauley)	
1:40-2:00	Towards optimal mesh refinement for uncertainty propagation in a phase field model of brittle fracture (J. Andres Christen)	Eulerian framework for dynamic fragmentation of brittle materials (V. Agrawal)	Dynamic Simple Shear Characterization and Dynamic Viscosity of Polymeric Gels (G. Subhash, K. Upadhyay, D. Spearot)	Laser-Driven Micro-Flyer Plates for spall studies in AZ31B Magnesium Alloy Thin Films (D. Mallick, V. Kannan, J. Lloyd, B. Bosworth, M. Foster, K.T. Ramesh)
2:00-2:20	Calibrating Strength Model Parameters Using Taylor Anvil and Stress-Strain Data (J. Florando, N. Baron, J. Bernstein, A. Kupresanin, D. Rivera, K. Schmidt)	The importance of inclusions in the failure of boron carbide (A. Tonge)	A novel split Hopkinson bar using electromagnetic loading (Y. Li, H. Nie, T. Suo, Z. Tang, H. Zhao)	Predicting Dislocation-Interface Reactions from the Atomistic to the Microscale (L. Xiong)
2:20-2:40	Uncertainty Quantification approaches to small 3D printed microstructure datasets (S. Ghosh, D. Allaire, R. Arroyave)	Intrinsic Hardness of Boron Carbide: Influence of polymorphs, stoichiometry and Bonding Structure (G. Subhash, A. Cheednay, A. Awasthi)	Hydrogen induced fast fracture (V. Deshpande)	Thermally activated twin thickening and solute softening in magnesium alloys - a molecular simulation study (P.Yi, M.Falk)
2:40-3:00	Surrogate model based multiscale bridging with accelerated Gaussian learning (T. Wang, K. Leiter, P. Piechac, J. Knap)	Modeling the Inelastic Behavior of Tungsten-Carbide in Pressure-Shear Plate Impact Experiments at Very High Pressure (Z. Lovinger, C. Kettenbell, M. Mello, G. Ravichandran)		Dynamic Necking and Fragmentation of Ductile Materials – Expanding Ring Test and Modeling (H. Zhang, K. Ravi-Chandar)

3:00-3:30	Coffee Break – Annapolis Atrium			
	Regatta A Modeling and Characterization of Fiber-Matrix Interphase (Sanjib Chowdhury, John W. Gillespie Jr, Timothy W. Sirk)	Regatta B Experimental and Computation Characterization of Dynamic Behavior of Advanced Ceramics (Ghatu Subhash)	Regatta C Impact Matters: KT Ramesh's 60th Birthday Symposium (Shailendra Joshi, Jamie Kimberley, Leslie Lamberson, Emily Retzlaff, Justin Wilkerson)	Windjammer Mechanical Processing for Advanced Lightweight Alloys (Laszlo Kecskes, Nicholas Krywopusk, Timothy Weihs)
3:30-3:50	Molecular Modeling of Silica-Silane-Epoxy Interphase (S. Chowdhury, R. Elder, T. Sirk, G. Palmese, J. Gillespie)	Dynamic behavior of directionally porous hierarchical ice-templated ceramics: Effects of porosity, morphology, and strain rate (D. Ghosh, M. Banda, S. Akurati, D. Terrones, J. John)	On the Applicability of Grady's Fragment Size Formula for the Brittle or Ductile Materials (F. Zhou, X. Zheng)	Mechanical Properties of Hexagonal Close Packed Metals Subject to Severe Plastic Deformation, A Review (S. Agnew, J. Bhattacharya)
3:50-4:10	Insights into the interphase formation between glass-fiber and epoxy based polymers (S. Zarrini, M. Huang, C. Abrams)	Using ultra-high speed imaging to obtain tensile properties of armour ceramics at high strain rates (L. Fletcher, F. Pierron)	Getting stuck and breaking free (K. Bhattacharya)	Interplay of dynamic precipitation and recrystallisation in Mg-Al alloys (S. Eswarappa Prameela, P. Yi, V. Liu, L. Kecskes, M. Falk, T. Weihs)
4:10-4:30	New Surface Treatment and Sizing Technology for Improved Carbon Fiber Composite Interface Properties (S. Ozcan)	An algorithm for modelling the micromechanical behaviour of polycrystalline ceramics (S. Falco, N. Fogell, S. Kasinos, N. Petrinic, L. Iannucci)	Novel Capability for Microscale In-situ Imaging of Temperature and Deformation Fields under Dynamic Loading (M. Zhou, A. Keyhani)	First principles calculations of the energetics of precipitation and the interaction of point defects in magnesium aluminum alloys (S. Ghosh, K. Bhattacharya, M. Ortiz)
4:30-4:50	Interfacial failure mechanisms of different single FRPC under transverse tensile loading (J. Chu, J. Gao, D. O'Brien, W. Chen)	Hierarchical multiscale modelling of Alumina ceramics using the Johnson-Holmquist II constitutive model (N. Fogell, S. Kasinos, S. Falco, L. Iannucci)	The structure of shock waves in porous metals (A. Molinari, C. Czarnota, S. Mercier)	Processing Refractory Metals by Severe Plastic Deformation – Challenges and Opportunities (T. Hartwig)
4:50-5:10	Modeling of Failure Process of Multiple Fiber Reinforced Composites Using an Interface-Oriented Finite Element Framework (R. Liu)	Dynamic Compression Strength of Ceramics: Preliminary Results from a Round Robin Exercise (J. Swab, G. Quinn)	On the dynamics driving the rupture of interfaces obeying rate-and-state friction laws (J.F. Molinari, F. Barras, E. Bouchbinder, M. Aldam, E. Brener)	The role of extreme cold work on elastic precursor decay (J. Jonsson, D. Chapman, D. Eakins)
5:10-5:30	Progress on the stochastic micromechanical modeling of transverse punch shear damage behavior of unidirectional composites (B. Haque, M. Ali, J.W. Gillespie Jr.)	A multi-mechanism-based constitutive model for the dynamic failure of quasi-brittle materials (Q. Zeng, A. Tonge, K.T. Ramesh)		Atomistic simulation of dislocation-assisted precipitate nucleation in Mg-Al alloys (P. Yi, M. Falk)
6:00	Reception – Annapolis Atrium			
6:30	Conference Banquet with speakers Regatta Ballroom			

FRIDAY 4/5

8:30	Breakfast – Annapolis Atrium			
9:00	Plenary Lecture and Discussion: Prof. William Curtin - Regatta Ballroom			
10:00	Coffee Break– Annapolis Atrium			
	Regatta A High rate multiscale mechanics of particulate materials and soils (David Fox, Richard Regueiro)	Regatta B Multiscale approaches to modeling hierarchical materials (Christopher Meyer, Xiaofan Zhang, Bazle Haque)	Regatta C Slip, Twins, and Voids – IV (Jeffrey T. Lloyd, Shailendra Joshi, Justin Wilkerson)	Windjammer Multiscale Models and Experiments for Energetic Materials (Kasra Momeni)
10:30-10:50	Dynamic Fracture of Granular Particles Impacted at Different Velocities (W. Chen , N. Parab, Z. Guo, T. Sun, K. Fezzaa)	Bridging the scales: Continuum-based material constitutive modeling of mechanical and ballistic test data from composites and fabrics (A. Carpenter , S. Chocron, C. Anderson)	Hole Closure Experiments for Assessing Flow Strength at High Rates and Large Deformations (N. Barton , J. Lind)	Novel meso-scale diagnostics for temperature and deformation field measurements in energetic materials (L. Farbaniec , A. Keyhani, D. Chapman, M. Zhou, D. Eakins)
10:50-11:10	Mesoscale Study of Rate Effects in the Comminution of Brittle Powders (M. Homel , E. Herbold)	Material Behavior and Failure Mode under Dynamic Loading based on Taylor test (G. Voyiadjis , Y. Song, A. Rusinek, R. Abo Znemah, J. Jeong)		Overview of the First SHPB Experiments on Single Crystal Explosives (C. Meredith , D. Casem, K. Ramos, C. Lie, B. Morrow, C. Cady)
11:10-11:30	Dynamic Granular Flow of Boron Carbide in Pressure Shear Plate Impact (X. Sun , A. Tonge, J. LaSalvia)	A Multiscale, Nonlocal Sub-Laminate Model for Progressive Damage in Composite Materials (K. Kodagali , S. Sockalingam)	A damage model based on dislocation-mediated nucleation of microcracks under high-rate compression (N. Daphalapurkar , D.J. Luscher, M. Nelms)	Temperature evolution in plastic bonded explosives during impacts (N. Mohan , D. Luscher, M. Cawkwell, K. Ramos)
11:30-11:50	Developing a Generalized Parallel Computing Framework for Particle-shape-captured DEM-CFD Coupling Simulations of Gas-Particles Interaction in Compressible Supersonic Flows (B. Yan , R. Regueiro)	Parametric Homogenization based Continuum Elasto-Plastic Models for Titanium Alloys (S. Kotha , D. Ozturk, S. Ghosh)	Elastic models of dislocations based on atomistic Kanzaki forces (B. Gurrutxaga-Lerma , J. Verschuere)	Phase-field approach to nonequilibrium phase transformations in HMX energetic crystals (K. Momeni)
11:50-12:10	Interaction of Shock Wave with Granular Materials through High-speed Schlieren photography (H. Lu , H. Luo)	Orthotropic Face Sandwich and Composite Beam Analysis using Improved Higher Order Theory with Inter-laminar Strain Energy Continuity Assumption (T. Takele Kasa)	Damage by void growth in nanotwinned metals (S. Joshi)	Energy localization in shock-compressed TATB bicrystals (M. Nelms , M. Krooblawd, R. Austin)
12:10-12:30	Particle-scale Modeling and Simulation Powder Processing -- Die Filling and Compaction (J. Lechman , M. Cooper, D. Bufford, C. Barr)	A statistical mechanical model for the electrostriction of polymers (M. Grasinger , K. Dayal)	Eliminating reversible twinning during shock loading via pre-twinning (J. Lloyd , J. Ligda, C. Williams)	A Multiscale Assessment of Microscopic Mechanisms to Model Propellant Behavior Nonlinearities (M. Picquart , D. Aubry, G. Puel, G. Poirey)
12:30	Lunch – Annapolis Atrium			
1:30	ADJOURN			