

**WEDNESDAY 4/5**

8:00	<b>Registration and Breakfast – Annapolis Atrium</b>			
8:45	<b>Welcome and Opening Remarks: Lori Graham-Brady – Regatta Ballroom</b>			
9:00	<b>Plenary Lecture: Michael Eldred: Multilevel-Multifidelity Approaches for Uncertainty Quantification and Design – Regatta Ballroom</b>			
10:00	<b>Coffee Break – Annapolis Atrium</b>			
10:30	<b>Plenary Lecture: Sankaran Mahadevan: Uncertainty aggregation in multi-level, multi-physics problems- Regatta Ballroom</b>			
11:30	<b>Panel Discussion, session chair: Lori Graham-Brady - Regatta Ballroom</b>			
12:00	<b>Lunch – Annapolis Atrium</b>			
	<b>Regatta A</b> <b>Field-Assisted Mechanics</b>	<b>Regatta B</b> <b>Experiments and Modeling on Dynamic Response of Ceramics and transparent materials</b>	<b>Regatta C</b> <b>Emphasizing Role of Interfaces in Dynamic Material Behavior</b>	<b>Windjammer</b> <b>Coarse-graining and Scale-Bridging</b>
1:00-1:20	“Longitudinal impact of piezoceramics” (G. A. Gazonas, R. Wildman, D. Hopkins, M. Scheidler)	“Deciphering the High-Pressure Deformation of Boron Carbide using Experimental and DFT Generated Raman Spectra” (G. Subhash, A. Awasthi, G. Parsard)	“Modeling the Effects of Microstructure on Localization in Polycrystalline Stainless Steel” (C. Alleman, J. Foulk, A. Mota, H. Lim, D. Littlewood)	“Probing the Phase Behavior of Coarse-Grained Polymer Models with Nested Sampling” (K. M. Salerno, N. Bernstein)
1:20-1:40			“Self-consistent homogenization of compressed granular materials with imperfect interfaces and application to modelling of polycrystalline TATB” (K. C. Bennett, D.J. Luscher, M. Buechler)	“Optimizing coarse-grained potentials to improve the prediction of thermoset epoxy polymer properties” (C. Jang, C. Abrams)
1:40-2:00	“Exploring routes towards intrinsic toughening of electroceramics” (J. Krogstad, C. Smith)	“Discerning the Structure of Boron Carbide with Quantum Mechanics and Raman Spectroscopy” (C. Kunka, G. Subhash, A. Awasthi)	“A Geometric Approach to Modeling Dynamic Deformation and Evolving Interfaces in Boron Carbide and Magnesium Single Crystals” (J. Clayton)	“Pressure transferable structure based coarse-graining for modeling the shock response of polymers” (J. Oswald, V. Agrawal)
2:00-2:20	“Homogenization of elastic dielectric composites with rapidly oscillating passive and active source terms” (O. Lopez-Pamies, V. Lefevre)	“Stress Concentration/Intensification Regions in Boron Carbide” (J. W McCauley)		“Effects of Coarse-Graining on Simulations of Mechanical Properties of Polymers” (T. Ge, M. O. Robbins)
2:20-2:40	“A Finite-Deformation Framework for Modeling Soft Electro-Magneto-Elastic Materials” (R.L. Lowe, M. Dapino, S. Bechtel)		“The role of interfaces during dynamic fragmentation of multi-phase brittle materials” (D. Cereceda, D. Kats, N. Daphalapurkar, L. Graham-Brady)	“Molecular-level framework for the dynamic mechanical response and yielding of polymer glasses” (A. Zaccone, V. Palyulin, C. Ness, R. Elder, R. Milkus, T. Sirk)
2:40-3:00	“Photo-responsive Liquid Crystalline Epoxy Networks with Shape Memory Behavior and Dynamic Ester Bonds” (Y. Li, O. Rios, J. Keum, J. Chen, M. Kessler)	“Towards predictive transferable simulations of ceramic failure in ballistic events” (A. Tonge)		“Micromechanical models for the stiffness and strength of UHMWPE microfibrils” (Z. Wang, H. Dong, A. Azoug, T. C. O'Connor, M. O. Robbins, V. Nguyen)
3:00-3:30	<b>Coffee Break – Annapolis Atrium</b>			

	<b>Regatta A</b> <b>Statistical approaches to materials modeling</b>	<b>Regatta B</b> <b>Extreme Materials Science with High-Power Pulsed Lasers</b>	<b>Regatta C</b> <b>Emphasizing Role of Interfaces in Dynamic Material Behavior</b>	<b>Windjammer</b> <b>Coarse-graining and Scale-Bridging</b>
<b>3:30-3:50</b>	“Estimates response maxima in random microstructures” (M. Grigoriu)	“On the Ultimate Tensile Strength of Tantalum” (M. Meyers)	“Structure of semicoherent U-Zr interfaces” (E. Chen, R. Dingreville, C. Deo)	“Non-Markovian coarse-grained models derived from the Mori-Zwanzig formalism” (Z. Li, H. S. Lee, E. Darve, G. Karniadakis)
<b>3:50-4:10</b>		“Probing matter at extreme states of deformation: from kilobars to gigabars” (B. A. Remington)	“Slip transmission in fcc/fcc bilayers using phase field dislocation dynamics (PFDD)” (A. Hunter, Y. Zeng, I. Beyerlein, M. Koslowski)	“The effect of hydrogen on plastic deformation as predicted from discrete dislocation dynamic simulations” (Y. Gu, J. El-Awady)
<b>4:10-4:30</b>	“A multiscale model for the failure of grain boundaries in graphene grown via chemical vapor deposition through nanoindentation experiments” (C. S. DiMarco, A. Marano, P. Turquet de Beauregard, T. Robilios, J. Home, J. W. Kysar)	“Multiscale Modeling of Laser-Driven High-Rate Deformation of BCC Metals” (R. E. Rudd, A. Arsenlis, R.M. Cavallo, H.-S. Park, S.T. Prisbrey, B.A. Remington)	“Investigating Crystal/Binder Interface Properties of HMX Based Composites Using In-Situ Computed Tomography Imaging and Cohesive Element Modeling” (D. J. Walters, D. J. Luscher, J. Yeager, B. Patterson)	“Quasi-Coarse-Grained Dynamics: Bridging the Mesoscale Gap in the Modeling of Shock Response of Metals” (A. Dongare, G. Argawal, R. Valisetty, R. Namburu, A. Rajendran)
<b>4:30-4:50</b>	“Transverse Failure of Carbon Fiber Composites: Analytical Sensitivity with respect to the Distribution of Fiber/Matrix Interface Properties” (P. Geubelle, M. Shakiba, S. Zacek, D. Brandyberry)	“Dynamic strength of metals from microseconds down to picoseconds” (G. I. Kanel, S. V. Razorenov, S. I. Ashitkov, E. Zaretsky, T. de Regesseguier)	“Effect of substrate material on energy absorption response of polyurea under laser-induced dynamic tensile loading” (K. C. Jajam, N. R. Sottos)	“Multiscale Modeling of Shocked Dusty Gases Using Kriging Based Surrogate Models for Bridging Scales” (O. Sen, S. Roy, H.S. Udaykumar, K.K. Choi, G. Jacobs)
<b>4:50-5:10</b>	“Multi-scaling by surrogate model generation for computational models of fiber-reinforced composite materials” (A. Bhaduri, L. Graham-Brady, M. Shields)	“Amorphization of Silicon, Germanium and Boron Carbide by Laser Shock Compression” (S. Zhao, E. Hahn, B.A. Remington, C. Wehrenberg, K. More, M. Meyers)	“Relations between interface and bulk properties” (D. Zhang, C. Long)	“Scale-bridging for multiscale modeling of reactive materials” (J. Knap, K. Leiter, B. C. Barnes, R. Becker)
<b>5:10-5:30</b>		“USING LASER DRIVEN MICRO-FLYERS TO STUDY DEFORMATION MECHANISMS” (D. Mallick, M. Shaeffer, K.T. Ramesh)	“Interacting Effects of Strengthening and Twin Boundary Migration in Nanotwinned Metals” (S. Joshi)	“Multiscale Analysis of Heterogeneous Energetic Materials using Surrogate Based Modeling Techniques” (N. K. Rai, A. Nassar, O. Sen, S. Roy, H.S. Udaykumar)
<b>5:45</b>	<b>Poster Session / Reception – Annapolis Atrium</b>			
<b>7:15+</b>	<b>Dinner on your own</b>			

# THURSDAY 4/6

7:30	<b>Special Session: Data Integration in Materials Research, Tamas Budavari and Nick Carey -Mainsail Room</b>				
8:30	<b>Breakfast – Annapolis Atrium</b>				
9:00	<b>Plenary Lecture: William Carter: Architected Materials – Regatta Ballroom</b>				
10:00	<b>Coffee Break – Annapolis Atrium</b>				
10:30	<b>Plenary Lecture: Ruth Schwaiger: Strong and Robust Mechanical Metamaterials: the Role of Nanoarchitecture - Regatta Ballroom</b>				
11:30	<b>Panel discussion, session chair: Lorenzo Valdevit - Regatta Ballroom</b>				
12:00	<b>Lunch – Annapolis Atrium</b>				
	<b>Regatta A Architected Materials: Design, Fabrication and Characterization</b>	<b>Regatta B Slip, twins, and voids in low symmetry materials</b>	<b>Regatta C Polymers and Fibers</b>	<b>Windjammer Ceramics for extreme environments: processing, characterization and modeling</b>	<b>Mainsail Emphasizing Role of Interfaces in Dynamic Material Behavior</b>
1:00-1:20	“Rotational 3D printing of bioinspired, damage-tolerant materials” (J. Raney, B. Compton, J. Mueller, T. Ober, K. Shea, J. Lewis)	“Twinning in Polycrystalline Mg at High Strain Rates at the Atomic Scales” (A. Dongare, G. Agarwal)	“Molecular simulation of crystallization of chain molecules from the melt” (G. C. Rutledge, A. Bourque, D. Nicholson, P. Yi)	“A Potential Methodology for Evaluating Ceramic Quality” (M. Burkins, D. Little, M. Love)	“Towards Quantifying the Plastic Flow and Internal Stress State of Additively Manufactured Stainless Steels” (C. A. Bronkhorst, J.R. Mayeur, V. Livescu, S. A. Vander Wiel, D.W. Brown)
1:20-1:40	“Multifunctional Architected Elastic Materials with High Stiffness and Energy Dissipation” (B. Haghpanah, A. Shirazi, L. Salari-Sharif, A. Guell, L. Valdevit)	“A New Crystal Plasticity Finite Element Model to simulate Large Strain Phenomena in Magnesium Alloys” (K. Inal)	“A fundamental, robust and inexpensive model for the linear and nonlinear rheology of entangled polymers” (J. D. Schieber)	“Composition and Analysis for Bulk Silicon Doped Boron Carbide Formation” (A. Etzold, R. Haber, V. Domnich)	
1:40-2:00	“Design and Fabrication of Hierarchical 3D architected Metamaterials with programmable damage tolerance and strength” (R. Zheng)	“Pressure pulse shape effects on spall determined through direct numerical simulation” (R. Becker, K. Callaghan)	“Micro-Structure of Ultra-High Molecular Weight Polyethylene Fibers Gel-Spun in Vegetable Oils” (C. Henry)	“Modifying B4C Atomic Structure to Achieve High Strength and High Ductility from Atomistic Simulations” (W. A. Goddard III, Q. An)	“Effect of Interface Chemistry on Failure of Energetic Material Examined via Nano-Mechanical Raman Spectroscopy, Interface Impact Experiments, and Cohesive Finite Element Method” (V. Tomar, C. Prakash, E. Gunduz)
2:00-2:20	“Origami-based mechanical metamaterials for tailoring stress wave propagation” (J. Yang, H. Yasuda)	“On the Competition Between Shear Banding and Failure By Void Coalescence In Magnesium Alloys: Experiments and Modeling” (A. Benzerga, N. Thomas, B. Kondori, S. Joshi)	“Effect of chain stiffness on temperature-dependent melt dynamics and solidification behavior of crystallizable bead-spring melts” (R. S. Hoy, H. T. Nguyen)	Similarity Metrics Analysis of B4C Polymorphic Structural Differences As Measured From Virtual XRD” (E. Hernandez-Rivera, M. Tschopp, S. Coleman, D. Taylor, G. Subhash, G. Parsard)	Multidimensional continuum modeling of the effects of interfaces on polycrystal plasticity under shock loading” (D.J. Luscher, M. Kenamond, J. Mayeur, A. Hunter, H. Mourad)
2:20-2:40	“Design of ultra-dissipative multiphase material microstructures under uncertainty” (A. Asadpoure, A. Louhghalam, M. Tootkaboni)	“Combined effects of anisotropy and tension-compression asymmetry on void evolution in HCP Titanium” (O. Cazacu, B. Revil-Baudard)	“Molecular dynamics simulation of semi-crystalline polyethylene: effect of entanglements and processing conditions” (Y. Sliozberg, I.-C. Yeh, J. Andzelm)	“Thermal Shock as an Indicator of Ballistic Performance” (B. James, R. Beaumont, J. Yeomans)	“Opening electronic band gaps in 2D materials by deformation twins” (D. Sun, D. Rojas, M. Ponga)
2:40-3:00	“Topology Optimization with Multiple Base Materials for the	“Crystal Plasticity Finite Element Modeling of Discrete Twin	“Simulations of Polymer Crystallization by Phase Field	“To twin or not to twin in boron carbide” (K. Xie, V. Domnich, J.	

	Design of Cellular Material Architectures” (J. Carstensen, J. Guest, S. Ha)	Evolution in Polycrystalline Microstructure” (J. Cheng, S. Ghosh)	Model with Smooth Particle Hydrodynamic Method and Finite Difference Method” (S. Huang)	McCauley, R. Haber, K. Hemker)	
<b>3:00</b>	<b>Coffee Break – Annapolis Atrium</b>				
	<b>Regatta A Architected Materials: Design, Fabrication and Characterization</b>	<b>Regatta B Slip, twins, and voids in low symmetry materials</b>	<b>Regatta C Polymers and Fibers</b>	<b>Windjammer Modeling and Characterization of Fiber-Matrix Interphase</b>	
<b>3:30-3:50</b>	“Process Modeling and Energy Absorption of Partially Impregnated and Hybrid Resin Tows” (M. Yeager, S. Advani, J. Gillespie)	“An experimental investigation of Lode effects on ductile fracture” (J. Herrington, A. Benzerga)	“Quantification of Nano to Microscale Fibril Adhesive Interactions” (P. McDaniel, J. Deitzel, K. Strawhecker, J. Gillespie, Jr.)	“Molecular Modeling of Glass Fiber Sizing Interphase Layer” (S. C. Chowdhury, R. Elder, T. Sirk, D. Hartman, J. Gillespie Jr.)	
<b>3:50-4:10</b>	“FE Analysis and Experimental Investigation of Topologically Optimized Light Stiff Lattice Structures with and without Stability Constraints” (L. Salari-Sharif, A. Asadpoure, L. Valdevit, M. Tootkaboni)	“Preferential Failure Orientations in Rolled AZ31B Under Dynamic Tensile Loading” (J. Kimberley, A. Matejunas)	“Morphological Studies of Polymeric Fibers by Solid-State NMR” (W. Hu)	“Interphase Characterization” (S. Tamrakar)	
<b>4:10-4:30</b>	“Property enhancement in low-dimensional materials via defect engineering, new path to materials’ architecture” (K. Momeni, H. Attarinani)	“Modeling localized flow in magnesium under dynamic loads” (J. T. Lloyd)	“Influence of segmental dynamics of interlayers on dynamic impedance optimization in laminated glass/plastic composites” (A. Hsieh, R. Elder, D. Veysset, W. Hu, J. Andzelm, K. Nelson)	“Multi-scale metrology for visualization and characterization of interphase failure” (R. Sheridan, J. Woodcock, J. Gilman, G. Holmes, C. Brison, V. Gudapati)	
<b>4:30-4:50</b>	“Towards tensegrity-based metamaterials” (J.J. Rimoli, R. Pal)	“A new atomistic-continuum multiscale framework based on optimal scaling laws for ductile fracture” (A. A. Ramabathiran, M. Ortiz)	“Diameter and Failure Strength Distributions for Dyneema SK76 Single Fibers” (D. Jenket, A. Forster, N. Paulter, M. Al-Sheikhly)	“Visualization of Fiber/Matrix Interfacial Debonding Mechanism at High Rate Loading” (J.Chu, D. O’Brien, W.Chen)	
<b>4:50-5:10</b>	“A Simple Fracture Criterion for Cellular Materials” (S. Szyniszewski, I. Bin Sa’adon, P. Carraro, S. Ogün, M. Quaresimin)	“Void growth in single crystal magnesium: Effect of crystal orientation and stress state” (B. Selvarajou, S. Pramod Joshi, A. A. Benzerga)	“In situ morphology observations of single high-performance fibers with novel multi-axial strain approach” (M. R. Roenbeck, K. Strawhecker, S. Lusting, E. Sandoz-Rosado)	“Computational studies of fracture in the fiber-matrix interphase” (R. Elder, T. Sirk, M. Walter, D. Knorr)	
<b>5:10-5:30</b>	“Micro-Mechanical Characterization of Micro-Architected Tungsten Coating at Elevated Temperatures” (Q. Jiao, G. Sim, J. El-Awady)	“The role of jogs on screw dislocations in controlling the c-axis deformation in magnesium” (K. Srivastava, J. El-Awady)	“Microscopic Models of Activated Creep and Yield in Semicrystalline Fibers” (T. C. O’Connor, M. Robbins)	“Parametric Homogenization Based Continuum Damage Mechanics Model for Composites” (X. Zhang, Z. Li, S. Ghosh, D. O’Brien)	
<b>6:00</b>	<b>Reception – Annapolis Atrium</b>				
<b>7:00</b>	<b>Conference Banquet with remarks from Stuart W. “Bill” Leslie ‘Whatever Happened to the Space Age’. Presentations of poster awards after dinner - Regatta Ballroom</b>				

**FRIDAY 4/7**

8:30	<b>Breakfast – Annapolis Atrium</b>			
9:00	<b>Plenary Lecture: Vikram Deshpande: Micro-mechanics of ultra-high molecular weight polyethylene fibre composites- Regatta Ballroom</b> <b>Session Chair: KT Ramesh</b>			
10:00	<b>Coffee Break– Annapolis Atrium</b>			
	<b>Regatta A</b> <b>Blast, Impact and Dynamic Characterisation of Biological Materials</b>	<b>Regatta B</b> <b>The Material Point Method Applications, Algorithms and Theory</b>	<b>Regatta C</b> <b>Processing and High-rate Deformation of HCP Elements and Alloys</b>	<b>Windjammer</b> <b>Transverse impact of ballistic fibers, yarns and laminates</b>
10:30-10:50	“Methods to re-create loading scenarios for blast injury studies with the shock tube system” (T.-T. N. Nguyen, J. Wilgeroth, K. Brown, W. Proud)	“Stability and Time Integration of MPM” (M. Berzins)	“In-situ neutron diffraction of pure Mg during ECAE” (N. Krywopusk, L. Kecskes, M. Frost, A. Stoica, T. Hufnagel, K. An, T. Weihs)	“Fiber based ballistic material development” (B. Scott, P. Cunniff)
10:50-11:10	“Shock Tube vs Explosive Blast Impacts on Biomaterials - Experimental Considerations” (T. Piehler, N. Zander, R. Banton, J. Duckworth, J. McCabe, R. Benjamin)	“Effect of Bulk Modulus in Computational Predictions of Traumatic Brain Injury” (N. Daphalapurkar, S. Ganpule, K.T. Ramesh)	“Simulation of thermo-mechanical processing of HCP metals through dynamic recrystallization in finite kinematics using a spectral method” (A. Tutcuoglu, Vidyasagar, K. Bhattacharya, Y. Chang, D. Kochmann)	“Ballistic Impact on Carbon Fiber Yarns: Tests, Theory, and Simulations” (S. Chocron, J. Walker, R. Bigger, K. Dannemann, K. Warren, H. Bayraktar)
11:10-11:30	“Structural Characterization and Mechanical Response of the Human Cranium” (C. A. Gunnarson, S. Alexander, T. Weerasooriya)	“Multiscale modeling based on dual domain material point method” (T. Dhakal, D. Zhang)	“Theory of the AED Index and Ductility Enhancement in Mg alloys” (A. Benzerga, S. Basu, B. Kondori, I. Karaman)	“Modeling and experimentation of high strain rate transverse compression response of ballistic fibers” (S. Sockalingam & J. Staniszewski, T. Bogetti, D. Casem, T. Weerasooriya, P. McDaniel, J. W. Gillespie Jr.)
11:30-11:50	“Implementation of a Failure Model for Biological Materials Subject to Shock Loading Conditions Using the Particle Based Software Kodiak” (Z. Hertel, S. Schumacher, R. Kraft)	“The Material Point Monte Carlo Model” (P. Goins, E. Holm)	“Effect of loading rate on the mechanical behavior of a La-doped magnesium alloy” (Q. Wei, K. Kondoh, L. Kecskes, P. Krishnan)	“Dynamic Progression of Multiple Fiber Breaks in a Unidirectional Composite under Tensile Loading” (R. Ganesh, J. W. Gillespie, Jr., D. O'Brien)
11:50-12:10	“Rate Dependent Response of Mineralized Tissue in Ganoid Fish Scales” (M. Nelms, W. Hodo, B. Crawford, K. Livi, A.M. Rajendran)	“Modeling the Electrochemistry of Lithium-Silicon batteries using a Hybrid Finite Volume/MPM Method.” (C. Gritton, J. Hooper, J. Guilkey, D. Bedrov, M. Berzins)	“Rate Sensitivity of Anisotropic Rolled AZ31B Magnesium Alloy” (M. Zhao, V. Kannan, K.T. Ramesh)	“Micromechanical time-position dependent boundary condition (STBC) and explicit homogenization of composites subjected to high strain rate impact” (Z. Li, S. Ghosh, D. O'Brien)
12:10-12:30	“Osteogenic differentiation of periosteum-derived stromal cells in strain rate dependent traumatic loading” (D. R. Sory, H. D. Amin, S. M. Rankin, W. Proud)	“A Convected Particle Tetrahedral Domain Interpolation Technique for the Material Point Method” (B. Leavy)	“Deformation and damage of Titanium alloys under extreme environments” (B. Revil-Baudard, O. Cazacu)	“Micro-Mechanical Modeling of Progressive Punch-Shear Behavior of Uni-Directional Composites” (B. Haque, M. Ali, R. Ganesh, J. W. Gillespie, Jr., C.-F. Yen, D. O'Brien)
12:30	<b>Lunch – Annapolis Atrium</b>			
1:30	<b>ADJOURN</b>			