

2024 DMI Combined Program and MURI Review

Capt. Derek Barbee | August 26-28, 2024 | Arlington, VA

Basic Research Innovation Collaboration Center (BRICC)
4100 N Fairfax Drive, Suite 450 | Arlington, VA 22203

Agenda Day 1 | Monday, August 26, 2024

Time	Topic	Speaker
0815-0830	Registration	
0830-0930	Mechanical characterization of energetic material simulants and dynamic pore collapse under extreme conditions	Dr. Pradeep Guduru, Brown
0930-1030	Thermo-mechanical constitutive modeling of energetic simulant and polymeric binder materials at high strain rates and pressures	Dr. David Henann, Brown
1030-1045	BREAK	
1045-1145	Sub-microsecond Cryogenic Thermal Cameras with On-Chip Burst Frame Memory	Dr. Jacob Rosestein, Brown
1145-1300	LUNCH	
1300-1400	Studying the Control of Detonation via Tailored Inhomogeneities	Dr. Jimmie Oxley, University of Rhode Island
1400-1430	Investigation of Ignition Processes in Solid Energetic Materials	Dr. Ellen Yi Chen Mazumdar, Georgia Tech
1430-1500	Visualizing Ultrafast Plasticity with X-ray Diffraction Microscopes	Dr. Leora Dresselhaus-Marais, Stanford
1500-1515	BREAK	
1515-1545	Battery - Propellant Hybrid Systems	Dr. Ming Tang, Rice
1545-1615	Enhanced Microstructural Control of Plastic Bonded Explosives via Additive Manufacturing	Dr. Monique McClain, Purdue
1615-1645	Energetic and Catalytic Porous Metal-Organic Frameworks	Dr. Adam Matzger, UMich Ann Arbor
1645	MEETING ADJOURN	

Agenda Day 2 Tuesday, August 27, 2024		
Time	Topic	Speaker
0815-0830	Registration	
0830-0900	Overview & Accomplishments	Dr. Tommy Sewell, Mizzou
0900-0945	Molecular Fundamentals	Drs. Sandanu Chaudhuri/Catalin Picu/Tommy Sewell/UIUC/RPI/Mizzou
0945-1015	Materials Modeling (plasticity, etc.)	Drs. Catalin Picu/Steve Waiching Sun/RPI/Columbia
1015-1030	BREAK	
1030-1115	Modified Johnson-Cook continuum material model for HMX	Drs. H.S. Udaykumar/Catalin Picu/Tommy Sewell/Iowa/UVA/Mizzou
1115-1200	Experiments	Dr. Dana Dlott, UIUC
1200-1330	LUNCH	
1330-1415	Experiments	Dr. Vikas Tomar, Purdue
1415-1500	Multiscale SDT	Drs. H.S. Udaykumar/Stephen Baek/Iowa/UVA
1500-1530	Future directions, close-out	Drs. H.S. Udaykumar/Tommy Sewell/Iowa/Mizzou
1530-1545	BREAK	
1545-1615	Multiscale modeling of shock-induced detonation initiation and failure	Drs. Alejandro Strachan/Marisol Koslowski/Purdue
1615-1645	Extreme nonequilibrium thermodynamics via quantum-chemical kinetics in multicomponent systems	Dr. Boris Yakobson/Rice
1645	MEETING ADJOURN	

Agenda Day 3 Wednesday, August 28, 2024		
Time	Topic	Speaker
0815-0820	Registration	
0820-0830	Piezoeenergetics — Coupled Piezoelectric and Nanoenergetic Materials with Tailorable and Switchable Reactivity	Dr. Steve Son, Purdue
0830-0910	Microscale Simulation (ReaxFF MD)	Dr. Adri van Duin, Penn State
0910-1005	Mesoscale Simulation and Prediction of the Optoelectrical, Mechanoelectrical and Thermochemical Responses of Polymer-Metal Particle Propellants	Dr. Min Zhou, Georgia Tech
1005-1020	BREAK	
1020-1100	Protonation and Exfoliation of Layered Metal Oxide Materials for AP Catalysts	Dr. Alp Sehirlioglu, Case Western
1100-1155	Fabrication and Reactive Characterization of Piezoenergetics	Dr. Steve Son, Purdue
1155-1325	LUNCH	
1325-1420	Preparation of Piezo-energetic Composites and Characterization	Dr. Rich Yetter, Penn State
1420-1500	Preparation of PE and MW active materials	Dr. Michael Zachariah, UC Riverside
1500-1515	BREAK	
1515-1545	High Energy Density Battery Composed of Energetic Materials	Dr. Steve Son, Purdue
1545-1615	High Speed Infrared Detectors for Focal Plane Arrays	Dr. Monica/Jeffery Allen/AFRL/RW
1615	MEETING ADJOURN	