

2021 Interfaces and Effects in Composite Energetic Materials (IECEM 2021)

Tuesday, April 13th, 2021

Time (EDT)	Topic
9:45 am	Sign in
10:00 am	Alice Savage (DEVCOM-ARL) Introductory Remarks and Overview of Sept. 2020 Workshop
10:20 am	John D. Yeager (LANL) Title: From Nano to Bulk: Property-Structure Relationships in Plastic-Bonded Explosives and Mocks
11:05 am	A. Dhiman (Purdue) Title: Interfaces Under Shock: Equation of State at Interface Level and its Correlation with Microstructural Effects
11:30 am	Break – 10 minutes
11:40 am	Dylan Carter (AFRL/RQ) Title: Interfacial strain measurements in solid propellant using digital image correlation
12:05 pm	Matthew J. Herman (LANL) Title: Formulation Advancements and Interfacial Reinforcement of High Loaded Composite Materials via Biologically Inspired Core-Shell Coating Technique
12:30 pm	Lunch Break – 30 minutes
1:00 pm	Belinda P. Johnson (University of Illinois Urbana-Champaign) Title: Experimentally Tracking Hot Spot Behavior in Model Plastic-Bonded Explosives Under Shock Compression
1:25 pm	Anagi M. Balachandra (Metna Co.) Title: Nondestructive Inspection of Polymer-Inorganic Interfaces via Single-sided Nuclear Magnetic Resonance
1:50 pm	Jennifer Sietins (DEVCOM-ARL) Title: 3D Microstructural Interface Characterization with In-situ μCT Tensile Loading
2:15 pm	Mark Varady (DEVCOM-CBC) Title: Influence of Particle-polymer Interface Adhesion on Chemical Transport in Polymer Composites
2:40 pm	Adjourn for the day

Wednesday, April 14th, 2021

Time (EDT)	Topic
9:45 am	Sign in
10:00 am	Barrett Hardin (AFRL/RW) Introductory Remarks and Overview of Computational Research Gaps
10:20 am	David Walters (LANL) Title: Simulating Crystal-Binder Delamination of PBXs using Cohesive Zone Models
10:45 am	Michelle Pantoya (Texas Tech) Title: The Interface Science of Metal Particle Reactivity
11:10 am	Break – 10 minutes
11:20 am	Adelia J. A. Aquino (Texas Tech) Title: Density Function Theory Calculations Characterizing Interface Reactions in Composite Energetic Materials
11:45 am	Alexandra Burch (LANL) Title: Finite Element Modeling of Bicrystal Delamination of Energetic and Inert Mock Crystals and Effects of Binder Adhesion on Composite Fracture Toughness
12:10 pm	Lunch Break – 30 minutes
12:40 pm	In-Chul Yeh (DEVCOM-ARL) Title: Computational Study of Energetic Materials at Interfaces
1:05 pm	Marisol Koslowski (Purdue) Title: Critical Heating Mechanisms in Shock-loaded Energetic Materials
1:30 pm	Waruna Kulatilaka (Texas A&M) Title: Advanced Laser Diagnostics for Imaging Chemical Species, Particles, and Flow Structures in Reacting Energetic Materials
1:55 pm	Manoj K. Shukla (US Army Engineer Research and Development Center) Title: Computational modeling on interfacial interactions and mechanical properties of polymer nanocomposites
2:20 pm	Steve Beaudoin (Purdue) Title: The Role of Adhesion and Elastic Modulus on the Sensitivity of Energetic Materials to Vibration and Impact
2:45 pm	Adjourn for the day

Thursday, April 15th, 2021

Time (EDT)	Topic
9:45 am	Sign in
10:00 am	Didier Montaigne (AFRL/RW) Overview of AM Research and Challenges
10:20 am	Bram Lasschuit (Delft University of Technology) Title: Characterisation of 3D Printed Solid Propellants with Computational Homogenisation
10:45 am	Blair Brettman (Georgia Tech) Title: Rheology and Formulation in 3D Printing High Solids Suspensions
11:10 am	Break – 10 minutes
11:20 am	Wouter Peerbooms (Delft University of Technology) Title: Sedimentation of Dense Suspensions in Narrow Tubes
11:45 am	Ranko Vrcelj (Cranfield University) Title: TBD
12:10 am	Jena McCollum (UC-Colorado Springs) Title: Assessing Strain Field Evolution in Thermosetting Particulate Composites Through Digital Image Correlation
12:35 pm	Lunch Break – 30 minutes
1:05 pm	Zane Roberts (LANL) Title: Tailoring Inert Direct-Ink-Write 3D Printing Formulations for Explosive Dilution
1:30 pm	Amy Peterson (UMass-Lowell) Title: Linking Surface Wettability and Interfacial Adhesion of Thermosetting Polymer Composite
1:55 pm	Discussion and Wrap-up
2:55 pm	Meeting adjourns