

In your Capstone posters, please remember that this event focuses on the cumulative program. A progress report that describes efforts in the last year or two is not appropriate for this Capstone. You should be presenting a more summative big picture view of your task's research accomplishments over the years and its impact on the program.



CMEDE

CENTER FOR
MATERIALS IN EXTREME
DYNAMIC ENVIRONMENTS

**Materials in Extreme Dynamic Environments Capstone
Thursday, January 20, 2022 (virtual using Zoom platform)**

Poster Session Guidance

This poster session guidance is for the MEDE capstone *virtual* event format.

Similar to the Fall Meeting, we would ask that each MEDE consortium principal investigator assign an individual (most likely a graduate student or postdoc) to present their research task. The research tasks are based on the BPP FY20-21, Congressional add, and the Partnered Research Initiative, and are listed in Appendix A. The poster content should be very similar to the content that was presented at the recent MEDE Fall Meeting. However, the format of the poster is slightly different.

1. Registration for the capstone

- A. You should only register for the capstone event if you are planning to attend. **If you registered earlier for the in-person capstone**, your registration will be converted to virtual. For all others [register here](#).
- B. In the Eventbrite registration, poster presenters should register their poster. There will be drop down menus to select which MEDE research task the poster is affiliated with. Appendix A of this document includes the listing of all MEDE consortium research tasks. ARL poster presenters do not need to affiliate their poster with a MEDE consortium research task.
- C. Each poster should only be registered by the poster presenter.

The deadline to register is **Wednesday, January 12, 2022**.

2. Poster Presentation Instructions

- A. Since a large poster file is not readable on a computer screen, each presenter will be required to prepare two slides. The presentation template can be downloaded from the [capstone event webpage](#).
- B. Once you complete your poster file, convert it to a pdf file and upload it to [this folder](#).
- C. If you have problems uploading the poster file, please contact [Jess Ader](#).

The deadline to upload the poster file is **Wednesday, January 12, 2022**.

The poster session is scheduled for 3:30pm – 5:15pm (ET) on January 20, 2022. We will inform you of your designated time the week of the event.

3. Key Points of Contact. If you have any questions, feel free to contact the following individuals:

- [Ms. Bess Bieluczyk](#), MEDE Capstone Coordinator
- [Ms. Jess Ader](#), MEDE Capstone Poster Session Coordinator

**Appendix A: MEDE Research Tasks****Metals CMRG**

TASK#	TASK TITLE	INSTITUTION	LEAD PI(s)
2021MetExHufnagel	Microstructural influences on spall void nucleation	JHU	Hufnagel
2021MetExKimberley	Effects of solute atoms and precipitates on deformation and twinning response in MgAl alloys	NMT	Kimberley
2021MetExRamesh	High Strain Rate Characterization, Thermal Softening and Spallation of Mg and the new CMRG alloys	JHU	Ramesh
2021MetModStuart	Physically-Informed Machine Learning For Material Deformations	Caltech	Stuart, Bhattacharya
2021MetModKochmann	The Interplay of Recrystallization and Precipitation during Mg Alloy Processing	ETH Zurich	Kochmann
2021MetModWilkerson	Optimal size, shape, spacing, and orientation of grains, twins, and second-phase particles for enhanced Mg spall resistance and ballistic performance	Texas AM	Wilkerson
2021MetProWeihs	Processing and Characterization of Novel Mg Alloys	JHU	Weihs, Hufnagel, Kecskes
2021MetModJoshi	A Reduced-order Basis for High-throughput Microstructure-Property Screening of Magnesium Alloys	Houston	Joshi
2021MetModBhattacharya	Mesoscale model of dynamic deformation of magnesium	Caltech	Bhattacharya
2021PRI	Partnered Research Initiative	NCAT	Sankar, Xu, Yarmolenko

Ceramics CMRG

TASK#	TASK TITLE	INSTITUTION	LEAD PI(s)
2021CerMod	Granular flow transitions and parameter sensitivities in the integrative model to guide materials by design	JHU	Graham-Brady
2021CerPro	Materials Synthesis and Processing Integrative Task	Rutgers	Haber
2021CerEx	Atomic-Resolution Characterization of Boron Icosahedra Ceramics	Lehigh	Harmer, Marvel
2021CerEx	TEM Characterization of Quasiplasticity in Boron Carbide	JHU	Hemker
2021CerEx	Canonical Experiments for the Ceramics CMRG using HyFIRE	JHU	Ramesh
2021CerEx	High-Strain-Rate Experiments on CMRG Boron Carbide Materials and BC crystals	JHU	Ramesh
2021CerMod	Integrative Modeling subtask (distributed over all 3 mechanisms)	JHU	Ramesh
2021CerHurley	Calibrating and validating granular flow model parameters to aid in integrative model predictions and materials by design efforts	JHU	Hurley

**Composites CMRG**

TASK#	TASK TITLE	INSTITUTION	LEAD PI(s)
2021ComEx2	Meso-Mechanical Modeling of Canonical Perforation Experiments	Delaware	Haque, Gillespie
2021ComMod4	Multi-scale Modeling of Damage and Failure in Composites	JHU	Ghosh
2021ComMod5	Micromechanical FE Modeling of Tensile Failure of Unidirectional Composites	Delaware	Gillespie
2021ComMod6	Micro-Mechanical Modeling of Progressive Punch-Shear, Punch-Crush & Tensile Behavior of Unidirectional Composites	Delaware	Haque, Gillespie
2021ComMod2	Multi-Scale Modeling of Fiber-Matrix Interphase	Delaware	Gillespie, Chowdhury
2021ComPro3	Synthesis of epoxy networks and interphases with controlled topology	Drexel	Palmese
2021ComMod1	Molecular Simulations of Sizing Deposition and Interphase Structure in S-Glass/Epoxy Composites	Drexel	Abrams
2021ComEx4	Real-time Damage Visualization in Composites Under Transverse Impact	Purdue	Chen
2021ComMod7	Sensitivities and uncertainty quantification in the composites integrative model using surrogate-based approaches	JHU	Graham-Brady
2021ComMod8	Development of a Rate-Dependent Progressive Damage Model for 2D and 3D Composites in LS-DYNA	Delaware	Haque, Gillespie

Integrative Tasks

TASK#	TASK TITLE	INSTITUTION	LEAD PI(s)
2021MDSC	MEDE Data Science Cloud	JHU	Elbert
2021Craedl	Collaborative Research Administrative Environment and Data Library	JHU	Sierakowski