

## **Meshfree, Peridynamics, and Particle Methods for Multi-Physics and Extreme Events Modeling**

Extreme events occurring as the result of manmade and natural disasters (blast, impact and penetration, earthquake, tsunami, landslide, etc.) involve complex deformation and multi-physics phenomena that are difficult to model with the conventional mesh-based methods. This minisymposium explores the latest developments in meshfree, peridynamics, and particle methods for modeling multi-physics and extreme events. This minisymposium solicits all related subjects, which include, but are not limited to, the following:

- Meshfree, peridynamics, and particle methods for modeling multi-physics and harsh dynamic loadings, high strain-rates, fracture and failure, and fragmentation-impact events.
- Recent advances in methods and algorithms for treating stationary and transient strong and weak discontinuities (shocks, shear bands, and fracture).
- Modeling of fluid-structure interaction in disaster dynamics and the associated material/structure failure processes.
- Multi-scale approaches to multi-physics and extreme material failure and disaster simulation.
- Computational investigations on high-rate damage and failure mechanisms in ductile, brittle, and quasi-brittle materials and structures.
- Applications to multi-physics failure and damage problems, including coupled processes such as thermal, mechanical, hydraulic, chemical, electrical, etc.
- Verification and validation of simulation models.
- Large-scale parallel computation and scalable algorithms for multi-physics and extreme event simulation.

### **Organizers**

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