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MULTI-SCALE, MULTI-RATE DAMAGE AND FRACTURE: MODELS, EXPERIMENTS, AND SIMULATIONS

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MINISYMPOSIUM

Fracture and damage mechanisms that lead to failure of structural materials are complex processes and pose challenges, in many aspects. For instance, models for bridging the various length-scale phenomena, predictive models with parameters based on physically inspired quantities, validation by the experimental observations, and overcoming computational obstacles are goals shared by many researchers. Given the complexity and breadth of the scientific expertise necessary, we believe that it is crucial for researchers to be informed and inspired by the community. We propose to bring those active in experiment, theory, and computation together and to promote interdisciplinary collaboration.

The organizers from Los Alamos National Laboratory (LANL) would like to invite the presentations on ductile and brittle damage modeling, experiments, and computational simulations. The current status and progress on the work being conducted at LANL will be share, and we will facilitate the communications between the various teams. We would like to extend the scope of this mini-symposium to include the innovative research from a larger scientific community.

More specifically, we will solicit the presentations on the following topics:

- Ductile damage model
- Brittle damage model, microscopic and on continuum level
- Damage nucleation and evolution
- Shear localization/shear banding
- Mesoscopic damage experiments
- Fracture experiments
- Fracture modeling
- Phase field modeling of fracture
- Molecular dynamics simulations
- Multi-scale methods
- Multi-rate (quasistatic, dynamic, and shock-loading)