

COMPUTATIONAL MECHANICS FOR PERFORMANCE AND DAMAGE OF MATERIALS

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ABSTRACT

Computational Mechanics is playing an increasingly important role in the design and evaluation of materials operating in harsh environments. The aim of this mini-symposium is to provide a forum for discussing the novel computational approaches that pertain to mechanics of materials. This mini-symposium seeks to bring together students, academicians and professionals working in the area of computational materials engineering.

The topics covered include (but are not limited to):

- Damage modeling in materials (e.g. local/nonlocal damage, phase field methods, cohesive zone methods)
- Multiscale modeling: Strategies for representing the inherently multiscale nature of the problem covering different spatial or temporal scales
- Enrichment and XFEM/GFEM methods
- Adaptive mesh or sampling grid generation
- Process-structure models: Part-scale and multiscale simulation of the manufacturing process for predicting surface topology and microstructure including defects
- Structure based property prediction
- Modeling of advanced manufacturing or joining processes
- Modeling of novel material systems
- Metal forming and materials processing simulation and design

- Process-part and topology optimization for design of structural parts/components
- Probabilistic methods in multiscale modeling