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HOMOGENIZATION METHODS IN SOLID MECHANICS

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ABSTRACT

This symposium will address recent advances in homogenization methods for developing multi-scale computational models of elastoplastic, nonlinear viscoelastic, hyperelastic and coupled behavior in composite materials and polycrystals. The contributions will include, but will not be limited to: (1) homogenization-based constitutive modeling of metallic composites, metal polycrystals, elastomeric composites, and semi-crsytalline polymers; (2) characterization of microstructure evolution in finite-deformation processes, (3) coupled-phenomena theory and its application to shape-memory alloys, magnetorheological elastomers, deformable dielectrics, and shape-memory polymers, and (4) macroscopic and microscopic instabilities.