

TMS 2018
147th Annual Meeting & Exhibition**MARCH 11 – 15, 2018**
PHOENIX, ARIZONA**SUBMIT AN ABSTRACT TO:****NANOSTRUCTURED MATERIALS****MECHANICAL BEHAVIOR AT THE NANOSCALE IV**

Understanding the mechanics of materials in small volumes is of fundamental importance because it simultaneously allows for the exploration of new properties at the smallest of length scales as well as provides a basis for understanding multiscale phenomena that originate at these length scales. This symposium will focus on the mechanical properties of small-volume and low-dimensional materials, as well as bulk materials that are comprised of or are aggregates of these materials, including bulk nanostructured materials and nanoscale-based hierarchical materials. Of particular interest are studies that discuss sample size effects, applications of nanoscale mechanical testing and the associated characterization, as well as modeling that addresses the mechanical properties of these materials. Properties of interest include: elasticity, strength, plastic flow, fatigue, and fracture with material systems ranging from hard materials, including metals and ceramics, to soft and biological materials.

Topics will include:

- Size effects on elasticity, strength, plastic flow, fracture, and fatigue in low-dimensional materials including nanopillars, nanowires, nanoparticles, thin films, multilayered materials, graded materials, and architecture-designed materials
- Changes in deformation types or patterns due to changes in scale including those due to size affected phase transformations, changes in density and types of interfaces, as well as available deformation sources
- Ex-situ and in-situ (SEM, TEM, XRD, neutron, etc.) mechanical characterization methods.
- Modeling and simulation at all scales, as well as coupled scale modeling, of mechanical behavior of nanostructured materials
- Confinement and size effects in glasses and disordered media.
- Small-scale mechanics of soft matter: polymers and biomaterials (e.g collagen, chitin, and keratin, as well as other organic materials)

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ABSTRACT DEADLINE IS JULY 1, 2017. SUBMIT ONLINE AT www.programmaster.org/TMS2018.

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