



SUBMIT AN ABSTRACT BY JULY 1

FEBRUARY 27-MARCH 3, 2022
ANAHEIM CONVENTION CENTER & ANAHEIM MARRIOTT
ANAHEIM, CALIFORNIA, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2022 SYMPOSIUM:

NANOSTRUCTURED MATERIALS

Mechanical Behavior at the Nanoscale VI

The mechanical behavior of materials emerges from the aggregate operation of competing deformation mechanisms that initiate at the nanoscale. Small-scale mechanics investigations therefore provide critical insights into the fundamentals of deformation phenomena and form a basis for scaling theories. Additionally, the reduction of organizational scale often yields new deformation mechanisms and mechanical behaviors that are not present in bulk materials.

This symposium will focus on the deformation behavior of nanostructured materials. A wide variety of nanostructured materials are considered within this scope including low-dimensional and 2D materials, multilayers, nanoarchitected materials and nanolattices, and bulk nanocrystalline aggregates. Studies that examine size effects and scaling laws, new nanoscale deformation phenomena, emerging methods in nanomechanical characterization, and developments in modeling techniques are welcomed.

Topics will include:

- Size effects on elastic properties, strength, plasticity, fracture mechanisms, adhesion, tribology and fatigue behavior in small-volume and low-dimensional systems including nanopillars, nanowires, nanoparticles, nanostructured fibers, 2D materials, thin films, multilayered materials, and nanolattices
- New nanoscale deformation phenomena in emerging materials and materials systems including concentrated multi-component solutions (e.g., high entropy alloys), complex alloys, 2D materials, nanotwinned materials, and nanoarchitected systems
- Transitions in deformation mechanisms due to scaling effects such as activation of interface-mediated mechanisms, exhaustion of deformation sources, and size effects on strain-induced phase transformations
- Developments in ex situ and in situ (SEM, TEM, synchrotron, neutron, etc.) techniques that push the limits of nanomechanical characterization (e.g., for extreme conditions such as high temperatures and/or high strain rates)
- Modeling and simulation of deformation processes and mechanical properties at the nanoscale, including coupling to meso/microscale methods

ORGANIZERS

Matthew Daly, University of Illinois-Chicago
Douglas D. Stauffer, Bruker Nano Surfaces & Metrology
Wei Gao, University of Texas at San Antonio
Changhong Cao, McGill University
Mohsen Asle Zaeem, Colorado School of Mines

SYMPOSIUM SPONSORS

TMS Computational Materials Science and Engineering Committee
TMS Mechanical Behavior of Materials Committee
TMS Nanomechanical Materials Behavior Committee

www.tms.org/TMS2022

QUESTIONS?
Contact programming@tms.org