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TMS 2017
146th Annual Meeting & Exhibition

February 26 – March 2, 2017
San Diego, California, USA

INTERFACE-MEDIATED PROPERTIES OF NANOSTRUCTURED MATERIALS

Advanced nanostructured materials, such as metallic nanolayered composites, nanograined and nanotwinned metals, core/shell wires, and nanostructured coatings, have drawn increased attention from the materials science community because of their potential for ultrahigh strength, increased ductility, thermal stability, and elevated fracture toughness. Fundamental barriers must be resolved to manufacture such advanced nanostructured materials in bulk form and at reduced cost. Significant research has been conducted in recent years to understand the underlying mechanisms that control the mechanical behavior of these advanced nanostructured materials. Both experiments and modeling have revealed that as microstructure length-scales are reduced from micrometer- to nanometer levels, interfaces, such as grain boundaries and phase boundaries, become crucial in determining the mechanical behavior of nanostructured materials.

This symposium solicits submissions from both the experimental and modeling communities whose research addresses the deformation and fracture of nanostructured materials and the correlation with structure and processing. Specific topics include:

- Defect-interface interactions
- Mechanical instabilities such as shear band formation or necking
- In-situ techniques for mechanical testing of nanostructured materials
- Atomistic simulations to understand unit deformation mechanisms as well as collective behaviors
- Multiscale modeling of deformation and fracture of nanostructured materials

ORGANIZERS

Caizhi Zhou, Missouri University of Science and Technology, USA
Nan Li, Los Alamos National Laboratory, USA
Peter Anderson, The Ohio State University, USA
Michael Demkowicz, Texas A&M University, USA

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