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TMS 2024
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HYATT REGENCY ORLANDO
ORLANDO, FLORIDA, USA
#TMSAnnualMeeting



SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2024 SYMPOSIUM:

MATERIALS SYNTHESIS AND PROCESSING

Ultrafine-grained and Heterostructured Materials (UFGH XIII)

Ultrafine-grained and heterostructured (UFGH) materials have been drawing great attention from the materials research community because of their superior mechanical and functional properties. In practice, heterostructures involving an architecture microstructure, such as coarse-grained colonies dispersed in fine-grained matrix, multi-length scale twins packed in predetermined fashion, impregnation of transformational phases into non-transformational phases, etc., can produce outstanding combinations of mechanical properties that are not accessible to materials having homogeneous microstructure. Formation of heterostructures enables a new perspective to further enhance the properties of UFG materials produced by severe plastic deformation and other processing methods. Heterostructured materials can be produced using industrial facilities for large-scale production at low cost.

A continuous effort has been made in the research field dealing with processing of UFGH materials and a significant number of studies have been conducted to understand the underlying mechanisms that control the mechanical behaviors of such materials. This symposium focuses on all aspects of the science and technology of UFG and heterostructured materials and covers a broad scope, ranging from fundamental science to their industrial applications.

Specific topics include, but are not limited to:

- Fundamental issues in processing of UFGH materials including, but not limited to, medium to severe plastic deformation techniques
- Deformation mechanisms of UFGH materials
- Novel UFG and heterostructures
- Mechanical and physical properties of UFGH materials
- Performance of UFGH materials in extreme environments (irradiation, thermomechanical, corrosion, etc.)
- Multiscale modeling of deformation and fracture of UFGH materials
- Emerging processing methods for UFGH materials, such as powder processing and rapid-solidification, mechanical and/or thermal processing
- Novel techniques to characterize the behaviors and properties of UFGH materials.

ORGANIZERS

Megumi Kawasaki, Oregon State University, USA
Penghui Cao, University of California, Irvine, USA
Mostafa Hassani, Cornell University, USA
Rajib Kalsar, Pacific Northwest National Laboratory, USA
Nilesh Kumar, University of Alabama, Tuscaloosa, USA
Praveen Kumar, Indian Institute of Science, USA
Dmytro Orlov, Lund University, USA

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