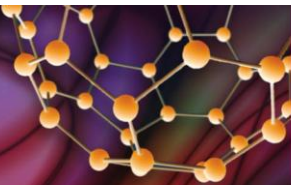




2009 MRS
fall meeting
Boston, MA • November 30-December 4



Abstract Deadline: June 23, 2009
www.mrs.org/fall2009

REMINDER:
In fairness to all potential authors,
late abstracts will not be accepted.

CALL FOR PAPERS

MRS Symposium GG: Plasticity in Confined Volumes—Modeling and Experiments

Micron and submicron external and internal microstructural-length scales can play a defining role in the strength and ductility of a material. Modern atomistic and mesoscopic simulation methods have elucidated a diverse range of atomic and mesoscale processes that can contribute to the emergent plasticity of such complex materials, ranging from dislocation dynamics in micron-sized confined volumes, the interaction between dislocations and grain boundaries in bulk and thin-film nanocrystals, to atomic scale activity associated with grain-boundary accommodation processes, as well as shear-transformation zones in metallic glasses. With the development of miniaturized mechanical testing facilities as well as leading edge *ex-situ* and *in-situ* methods, it now becomes experimentally possible to directly probe both the spatial and temporal dynamics of such processes. It is, therefore, the goal of this symposium to bring together the state-of-the-art in modeling and experiment activities under one forum, with particular emphasis on new methods and examples of synergies between experiment and simulation.

Topics to be addressed include (but are not limited to):

- Plasticity of small-scale systems such as micron-sized pillars, thin films, nanocomposites, nanoporous and nanocrystalline materials
- Advancements in small-scale mechanical testing, particularly *ex-situ* and *in-situ* characterization methods
- Mesoscopic dislocation dynamics modeling in confined regions
- Dislocation interaction with grain boundaries and grain-boundary accommodation processes
- Advancements in the atomistic modeling of plasticity: acceleration methods, reaction pathway calculations, and modeling, aiming at coarse graining of interfacial properties
- External- and internal-length-scale effects in plasticity and fatigue
- Stochastic aspects of dislocation dynamics: statistical methods for modeling and experimental analysis
- Confined plasticity of metallic glasses
- Use of simulation in interpreting *in situ* deformation diffraction experiments

A tutorial complementing this symposium is tentatively planned. Further information will be included in the MRS Program that will be available online in September.

Invited speakers include (partial list):

D. Dimiduk (Air Force Wright Aeronautical Labs), **E. George** (Oak Ridge National Lab), **W. W. Gerberich** (Univ. of Minnesota), **O. Kraft** (Univ. of Karlsruhe, Germany), **A. Minor** (Univ. of California-Berkeley/Lawrence Berkeley National Lab), **C. Motz** (Erich Schmid Inst. of Materials Science, Austria), **C. A. Schuh** (Massachusetts Inst. of Technology), **F. Spaepen** (Harvard Univ.), **E. Van der Giessen** (Univ. of Groningen, The Netherlands), **H. Van Swygenhoven** (Paul Scherrer Inst., Switzerland), **M. Verdier** (SiMAP, France), **A. Voter** (Los Alamos National Lab), **M. Zaiser** (Univ. of Edinburgh, United Kingdom), and **T. Zhu** (Georgia Inst. of Technology).

Symposium Organizers

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