MRS 2007 FALL MEETING
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CALL FOR PAPERS

ABSTRACT DEADLINE: JUNE 20, 2007

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

MRS Symposium AA: Fundamentals of Nanoindentation and Nanotribology IV

Nanoindentation and nanotribology are fundamental, evolving, and complementary disciplines within materials science. Recent years have resulted in rapid convergence of the biomechanical and materials disciplines, real wear and fracture problems appearing in microelectromechanical devices, and the explosive growth of the nanotube and nanostructured materials fields. The expansion of nanomechanical testing into these new fields has been accompanied by similarly rapid growth in our understanding of, and ability to perform, mechanical tests with ever-smaller forces and displacements. This occurs even as the materials and relevant length scales diverge from traditional engineering materials. Furthermore, the understanding of fundamental mechanical measurement techniques—directly addressing the precision, accuracy and engineering applicability expected of macroscopic mechanical tests—must continue to advance to understand and design new systems and materials to meet the challenges of technology and medicine.

This symposium will highlight emerging topics in nanoindentation and nanotribology, including the development of new methods for characterizing nanoscale mechanical and tribological properties. Submissions related to experimental research, as well as to new analytical and numerical models of nanoscale mechanical deformation, are encouraged.

Specific topics of interest include, but are not limited to:

- *In-situ* indentation techniques for combined indentation and imaging
- Application of new developments in nanoprobe instrumentation, including new tip geometries and functionalized tips
- Size and length-scale effects in deformation, including testing of nanostructured materials and nanocomposites
- Time-dependent indentation behavior in polymeric and biological systems
- Phase transformations under asperity contacts
- Studies of tribological processes and coatings ranging from mesoscopic down to the molecular level
- Numerical and analytical models for nanomechanical phenomena including molecular dynamics and multiscale models
- Nanoscale adhesion and fracture

The symposium will consist of invited and contributed talks, plus poster sessions.

A joint session with Symposium OO: *Solids at the Biological Interface* is being considered.

Invited speakers (tentative) include: **Etienne Barthel** (CNRS St. Gobain, France), **Matthew Begley** (Univ. of Virginia), **Jodie Bradby** (Australian National Univ., Australia), **Andrew Bushby** (Queen Mary Univ. of London, United Kingdom), **Yang-Tse Cheng** (Purdue Univ.), **Susan Enders** (Max-Planck-Inst. Stuttgart, Germany), **Alexander Hartmaier** (Univ. of Erlangen, Germany), **Andrew Minor** (Lawrence Berkeley National Lab), **Neville Moody** (Sandia National Labs), **Benedikt Moser** (EMPA, Switzerland), **John Pethica** (Trinity College-Dublin, Ireland), **Christopher Schuh** (Massachusetts Inst. of Technology), **Michael Swain** (Univ. of Otago, New Zealand), **Izabela Szlufarska** (Univ. of Wisconsin-Madison), and **Michael Uchic** (Air Force Research Lab).

Symposium Organizers

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