MRS Symposium Q: Mechanical Properties of Nanostructured Materials and Nanocomposites

Nanostructured materials and nanocomposites exhibiting unique functional and structural properties have the potential to have a revolutionary impact on technological progress in the 21st century. Of exciting interest, from both fundamental and applied viewpoints, is the outstanding deformation behavior of nanostructured materials and nanocomposites. In the past decade, tremendous investments in time, energy, and resources have been made to learn, control, and design materials at the nanoscale level for highly desired mechanical properties in metals, alloys, polymers, ceramics, and their composite systems, using advanced technologies of their synthesis, processing, and characterization. The main aim of this symposium is to provide a critical, up-to-date review and discussion on science and technology of nanomaterials and nanocomposites, with focuses placed on a fundamental understanding of the relationships between their fabrication, structure, strength, and ductility. We aim to create a forum for researchers involved in nanoscience and nanoengineering of bulk and composite materials, thick coatings, and thin films for structural applications, to share views and develop new ideas and concepts. Particular emphasis is placed on developing close interactions among scientists and engineers and fostering future transdisciplinary and multi-institutional cooperation in this new and rapidly growing area.

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

- Fabrication and processing of nanostructured materials and nanocomposites
- Theory and modeling of nanostructures
- Nanostructured and nanocomposite materials characterization
- Stress analysis of nanostructured coatings
- Plastic deformation of nanostructured materials
- Fracture of nanostructured materials
- Fatigue properties of nanostructured materials and nanocomposites
- Deformation-induced phase transformations in nanostructures
- Structure and mechanical properties of nanocomposites: polymer with dispersed ceramic or metal nanoparticles, ceramic/ceramic or metal/ceramic systems
- Structural materials from immiscible polymer blends
- Innovative structural applications of nanomaterials and nanocomposites
- Design of nanomaterials and nanocomposites for structural applications

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

Invited speakers include: **L. Ajdeljstajn** (Univ. of California-Davis), **C. Bampton** (Boeing), **R. Dowding** (Army Research Lab), **P. Green** (Univ. of Texas-Austin), **P. Hazzledine** (UES Inc.), **J.Th. M. De Hosson** (Univ. of Gröningen, The Netherlands), **C.C. Koch** (North Carolina State Univ.), **A.K. Mukherjee** (Univ. of California-Davis), **S. Nutt** (Univ. of Southern California), **S. Seal** (Univ. of Central Florida), **S. Suresh** (Massachusetts Inst. of Technology**), T. Tsakalakos** (Rutgers Univ.), and **B. Yakobson** (Rice Univ., Houston).

Symposium Organizers

R. Krishnamoorti
University of Houston, Dept. of Chemical Engineering,
4800 Calhoun, Houston, TX 77204-4004
Tel 713-743-4312, Fax 713-743-4323, ramanan@uh.edu

E. Lavernia
University of California-Davis, College of Engineering, Davis, CA 95616
Tel 530-752-0554, Fax 530-752-8058, lavernia@ucdavis.edu

I. Ovid'ko
Institute of Problems of Mechanical Engineering,
RAS, Bolshoj 61, Vas. Ostrov, St. Petersburg 199178, Russia
Tel 7-812-321-4764, Fax 7-812-321-4771, ovidko@def.ipme.ru

C.S. Pande
Naval Research Laboratory, Code 6325, Washington, DC 20375
Tel 202-767-2744, Fax 202-767-2623, pande@anvil.nrl.navy.mil

G. Skandan
Nanopowder Enterprises, Inc., 120 Centennial Ave.,
Piscataway, NJ 08854-3908
Tel 732-885-1088, Fax 732-885-5910, skandan@aol.com