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CALL FOR PAPERS

ABSTRACT DEADLINE: JUNE 21, 2005

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

MRS Symposium L: Mechanical Behavior of Biological and Biomimetic Materials

Biological tissues generally exhibit structural and compositional variations on the nanometer scale to the meter scale. These natural materials, along with biomimetic materials designed to imitate their composition and structure, frequently exhibit complicated mechanical responses due to local composition variations and overall hierarchical structure. Since natural tissues perform specific mechanical functions in vivo, it is critical that the native material's mechanical response is understood in order to develop replacement biomaterials to restore these mechanical functions. Mechanical behavior can also provide insight into the ultrastructure and organization of biological materials, which can provide unique information on structure-function relations and lead to new advances in the development of engineered materials for nonbiological applications. Understanding of the mechanical functions of biomaterials comes through the use of both experiments and modeling techniques.

This symposium will join together scientists and engineers in biomaterials and biomechanics, as well as clinicians in medicine and dentistry, to discuss the materials progress and challenges related to the mechanical behavior of biological and biomimetic materials.

Contributed papers and posters are solicited in the following areas:

- Multiscale mechanical characterization and modeling of natural biological materials including mineralized tissues, soft tissues, and plant materials
- Multiscale mechanical characterization and modeling of biomimetic materials including artificial organs, tissues, implants, bioactive coatings, and bio-inspired graft materials
- Changes in mechanical properties in biological and biomimetic systems due to biological or biochemical processes such as wound healing and growth factor additions
- Comparison between the mechanical behavior of biological materials and their counterpart biomimetic materials
- Time-dependent mechanical behavior and testing techniques used to characterize hydrated biological and biomimetic materials
- Mechanical characterization of structural features in tissues such as cell membranes or processes, cement lines in bone, or the dentin-enamel junction
- Techniques for characterization of biological and biomimetic materials at the ultrastructural level including nanoindentation and scanning probe techniques

Joint sessions are anticipated with Symposia J: *Biomimetic Polymers and Gels*, BB: *Mechanisms of Mechanical Deformation in Brittle Materials*, and NN: *Scanning Probe Microscopy in Materials Research*.

Invited speakers (tentative) include: **Kai-Nan An** (Mayo Clinic), **Alan Boyde** (Univ. of London-Queen Mary, United Kingdom), **Ken Gall** (Univ. of Colorado-Boulder), **David Kohn** (Univ. of Michigan), **Adrian Mann** (Rutgers Univ.), **Lisa Pruitt** (Univ. of California-Berkeley), **Dorin Ruse** (Univ. of British Columbia-Canada), **Michael Sacks** (Univ. of Pittsburgh), **Subra Suresh** (Massachusetts Inst. of Technology), and **Julian Vincent** (Univ. of Bath, United Kingdom).

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