The unique mechanical properties of biological materials are often attributed to the nanostructural details and hierarchy exhibited by such material systems. The mechanics of these systems is complex due to nano-architecture, the role of nanoscale interfaces, and the load-transfer mechanisms at interfaces. The same is true for many bio-inspired systems. For applications ranging from medicine to materials design for new structural materials, it is imperative that robust and realistic prediction methodologies of mechanical responses in these systems exist. This requires collaboration between many disciplines of engineering and science.

The focus of this symposium is to bring together researchers from many areas of mechanics and materials dealing with micromechanics, continuum methods, numerical methods, and experiments that investigate mechanical response in biological and bio-inspired systems at micro- and nano-length scale. In addition, the role of mechanics at the cellular and tissue level and its medical implications will be discussed.

Contributed abstracts, including posters, are solicited in the following areas:

- Modeling and simulation of mechanical properties in biological and bio-inspired systems
- Bridging length scales for modeling mechanical behavior in biological and bio-inspired materials
- Experimental techniques in nano-micro-macroscale mechanical characterization of biological and bio-inspired materials
- Role of structure and load-transfer mechanisms at interfaces on mechanics of nanostructured biological and bio-inspired systems
- Cellular and tissue mechanics and their role on disease


Invited speakers include: Eduard Arzt (Max Planck Inst., Germany), Carlijn V.C. Bouten (Eindhoven Univ. of Technology, The Netherlands), John Currey (Univ. of York, United Kingdom), Krishna Garikipati (Univ. of Michigan), Dinesh Katti (North Dakota State Univ.), Phillip Leduc (Carnegie Mellon Univ.), Randy Lewis (Univ. of Wyoming), Subra Suresh (Massachusetts Inst. of Technology), Julian Vincent (Univ. of Bath, United Kingdom), Steve Weiner (Weizmann Inst., Israel), and Chungfeng Zhao (Mayo Clinic).

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