

Purdue Workshop—Predictive materials modeling and simulations: nano- and micro-mechanics



Objectives

This by-invitation-only workshop will focus on recent progress and current challenges in the area of experimentally validated, predictive modeling of mechanical properties of nano- or micro-engineered materials. Areas of interest include micro- and nano-electromechanical devices and polymer composites. The workshop will bring together researchers from industry, national labs and academia, theoreticians, modelers and experimentalists to share their distinct perspectives. The workshop will also seek to: i) identify grand-challenge areas and the breakthroughs needed to address them; ii) foster collaborations to tackle these challenges; and iii) identify areas where making simulation tools widely and easily available to experimentalists and design engineers could have significant impact.

Topics of interest

- Mechanical response of MEMS/NEMS: size effects in mechanical response, role of microstructure; contact, friction, and tribology; creep and stress relaxation; reliability,
- Mechanical response of polymer composites: role of size and constraints in polymer response; strengthening mechanisms; yield criteria; strain localization and damage propagation;
- Multiscale and multiphysics modeling and simulations from atomistics to continuum: applications to MEMS/NEMS and polymer composites; bridging time and length scales; uncertainty quantification; materials design and optimization;

Program

- [program.pdf](#) (149 KB) 1 decade 4 years ago.

Organization

The workshop will be held at Purdue University on August 6 and 7, 2009. Invited speakers will give 30-minute presentations followed by 10 minutes of Q&A and there will be ample time for

discussion and exchange of ideas.

Sponsors

- NSF Network for Computational Nanotechnology (NCN) and nanoHUB.org
- Purdue Institute for Defense Innovation (PIDI) and Center for Predictive Materials Modeling and Simulation (PMMS)
- DoE-NNSA PSAAP Center for the Prediction of Reliability, Integrity and Survivability of Microsystems (PRISM)

Organizers

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