

Purdue Workshop

Predictive materials modeling and simulations: nano- and micro-mechanics

Thursday, August 6

Soft Materials, polymers and polymer-composites

Burton Morgan Center – Room 121

8:15 AM Marisol Koslowski, Purdue University
Welcoming remarks

Morning Session 1

8:30 AM Steven Christensen, *Boeing*
TBA

9:10 AM Grant Smith, University of Utah
Dispersing Nanoparticles in a Polymer Matrix: Are Long, Dense Polymer
Tethers Really Necessary?

9:50 AM Ale Strachan, *Purdue University*
Atomic-level view of yield and flow in polymers

10:30 AM Break

Morning Session 2

10:50 AM Markus Buehler, *MIT*
Deformation and failure of hierarchical biological protein materials

11:30 PM Rick Ross, *3M*
Prediction of Polymer Surface Energies via Mesoscopic and Molecular
Simulation

12:10 PM Lunch

Afternoon Session 1

1:30 PM Jon Gosse, *Boeing*
TBA

2:10 PM R. Byron Pipes, Purdue University
Recent advances in nanocomposites

2:50 PM Tia Benson Tolle, Air Force Research Lab
Predictive Modeling for High Performance Engineered Materials Overview of
Activities

3:30 PM Break

Afternoon Session 2

3:50 PM Posters Soft Materials pitch presentations.

4:10 PM Posters Micromechanics pitch presentations.

4:30 PM

- 5:30PM Posters Soft materials.
Posters Micromechanics.

Friday, August 7
Micromechanical modeling of micro-nano structured materials
Burton Morgan Center – Room 121

Morning Session 1

- 8:30 AM Dimitri Peroulis, Purdue University
Reliability issues on RF MEMS from the applications perspective.
- 9:10 AM Philippe Geubelle, UIUC
Multiscale modeling of creep damage in polycrystalline metallic films used in MEMS applications
- 9:50 AM Marisol Koslowski, *Purdue University*
Effect of dislocation confinement in ultra fine polycrystalline materials.
- 10:30 AM Break

Morning Session 2

- 10:40 AM Tim German, *LANL*
Mechanical Response of Cu-Nb Nanolayer Composites: Atomistic Simulations and Experiments.
- 11:20 PM Taher Saif, *UIUC*
Microstructural size and heterogeneity: the two key players at the nano scale
- 12:00 PM Lunch

Afternoon Session 1

- 1:00 PM Meiji Tang, Lawrence Livermore National Lab
Large Scale Dislocation Dynamics Simulations: applications to strength in bulk and finite crystalline systems
- 1:40 PM Alberto Cuitino, Rutgers
Mesoscopic Modeling of Inelastic Porous Solids
- 2:20 PM Break

Afternoon Session 2

- 2:40 PM Daniel Pantuso, *Intel*
Thermo-mechanical and materials reliability modeling in Si interconnects
- 3:20 PM Lou Hector, *GM*
Computational Materials Science and Mechanics for Energy Storage Materials and Structural Alloys
- 4:00 PM Panel discussion
Challenges and opportunities, cyber-enabled simulations.
- 5:00 PM Adjourn

