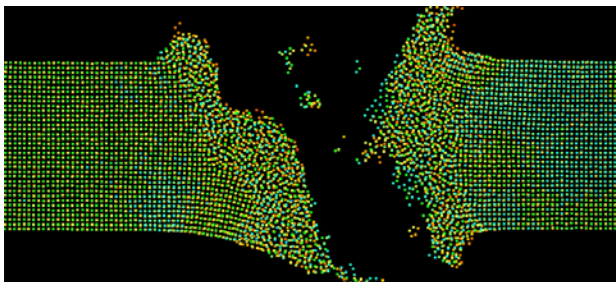
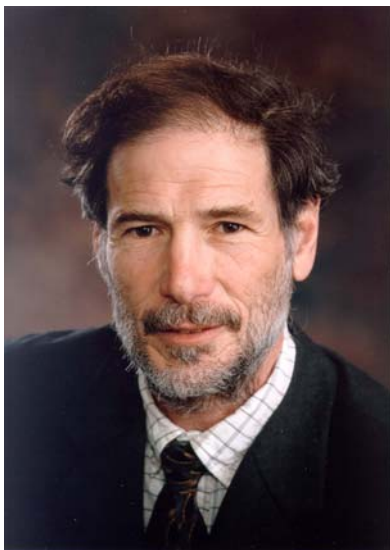




Center for Nanoscale  
Chemical-Electrical-Mechanical  
Manufacturing Systems

## Ion Beam Induced Nanostructures in Metal Thin-Films

As an energetic ion comes to rest in a solid, it creates a localized region of high temperature, pressure and high defect concentration. During prolonged irradiation, these localized regions overlap many times, but in many cases the morphology of the bombarded material undergoes self organization, manifesting patterns on a nanometer length scale. In this seminar, a few examples will be illustrated: three dimensional patterning of thin metal films on dielectric substrates by ion-induced dewetting, surface roughness in amorphous alloys, and compositional patterning in eutectic alloys. I will add an example of patterning under shear deformation, for comparison. It will be shown in several of these examples that the length scale of the morphology derives from a competition between ordering and disordering kinetics, which operate on different length scales.



Wednesday, October 11, 2006  
4:00 pm  
B02 Coordinated Science Lab

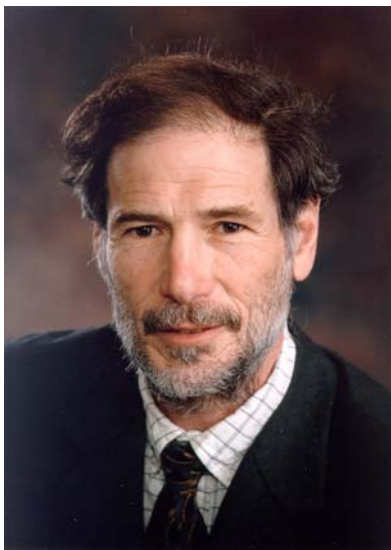
**R.S. Averback**  
Department of Materials Science and Engineering  
University of Illinois at Urbana-Champaign

*Professor Averback earned his Ph.D in physics at Michigan State University and was a postdoctoral fellow at Cornell University. He was a staff physicist at Argonne National Laboratory before coming to the University of Illinois in 1987. He is currently the Donald W. Professor of Materials Science and Engineering, a Fellow of APS, and a member of the Board of Director of the MRS. His work has emphasized ion beam modifications of materials, radiation damage, and far from equilibrium processing of materials. His current work explores self-organization in irradiated materials and the development of radiation resistant nanostructured materials for possible applications in advanced nuclear reactor designs.*



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Wednesday, November 15, 2006  
4:00 pm  
B02 Coordinated Science Lab

**R.S. Averback**  
Department of Materials Science and Engineering  
University of Illinois at Urbana-Champaign

*Professor Averback earned his Ph.D in physics at Michigan State University and was a postdoctoral fellow at Cornell University. He was a staff physicist at Argonne National Laboratory before coming to the University of Illinois in 1987. He is currently the Donald W. Professor of Materials Science and Engineering, a Fellow of APS, and a member of the Board of Director of the MRS. His work has emphasized ion beam modifications of materials, radiation damage, and far from equilibrium processing of materials. His current work explores self-organization in irradiated materials and the development of radiation resistant nanostructured materials for possible applications in advanced nuclear reactor designs.*