

2008-2009 Graduate Seminar Series

**The Department of
Mechanical Engineering – Engineering Mechanics**

Proudly Presents

Professor Melik Demirel
Pennsylvania State University



Prof. Melik Demirel joined the Pennsylvania State University in 2003. Before joining to Penn State, he worked at the Los Alamos National Laboratory on biosensors and at the National Institute of Health on protein dynamics as a research scientist. He also worked at Molecular Biology Department of the Max Planck Institute for Biophysical Chemistry, Germany as Alexander von Humboldt Fellow. Dr. Demirel's achievements have been recognized in part through his receipt of a Young Investigator Award from the Office of Naval Research, an Alexander von Humboldt Fellowship, an Institute for Complex Adaptive Matter Junior Fellowship, and the Pearce Professorship at Penn State.

Thursday, Oct. 23, 2008 3:00 – 4:00 p.m. Room 112, ME-EM Bldg.

A BOTTOM-UP APPROACH of CREATING NANOSTRUCTURED POLYMER FILMS

The ability to control the physicochemical properties of surfaces is important for many areas, such as biomedical or optical coatings, sensors, and catalyst supports. We have been developing nanostructured polymer thin films based on oblique angle polymerization (OAP) for these applications. [1-3] OAP is a bottom-up approach capable of fabricating high aspect ratio films exhibiting controlled morphologies without the need for complex lithographic processes. Properties of the resulting films, such as wettability, porosity, roughness, reactivity, or crystallinity are readily tuned via choice of deposition conditions and polymer functional groups. In this presentation, we will describe our process for creating nanostructured polymer surfaces and present results concerning the use of controlled wettability, sensors and catalyst applications of these surfaces.