



## DEPARTMENT OF ELECTRICAL ENGINEERING

Graduate Seminar Guest Speaker

**Dr. David Watson**  
Department of Chemistry  
University at Buffalo

### “Hybrid Nanomaterials by Self-Assembly and Template-Directed Synthesis”

Friday, January 20, 2006  
11:00 AM  
Knox 109

#### ABSTRACT

The bottom-up assembly of nanometer-scale structures represents a major challenge in materials chemistry. We are developing self-assembly and template-based techniques to prepare hybrid nanomaterials. The first part of the talk will focus on self-assembly. Bifunctional molecules are used to tether II-VI semiconductor nanoparticles to the surfaces of metal oxide thin films. Surface composition is tunable through adsorption-desorption equilibria. Combining the self-assembly process with thiol-ene photopolymerization chemistry enables the optical patterning of surfaces. We are also investigating the interfacial electron transfer reactivity of self-assembled materials. The second part of the talk will focus on templated electrodeposition of metallic and semiconductor nanowires. Deposition within ordered templates enables control over the composition and morphology of nanowires.

#### BIOGRAPHY

Dr. Watson received his B.S. in chemistry from Haverford College in 1996 and his Ph.D. in chemistry from Princeton University in 2001, under the advisor of Dr. Andrew Bocarsly. From 2001-2004 he held a position as a Postdoctoral researcher at Johns Hopkins University, under the advisory of Dr. Gerald Meyer. Dr. Watson has been an Assistant Professor with the Dept. of Chemistry at the University at Buffalo since 2004.