



The Spring 2007 Condensed Matter Seminar series presents:

Dr. Lam Yu

(Surface and Microanalysis Science Division, National
Institute of Standards and Technology)

*“Inelastic Electron Tunneling Spectroscopy of One,
Two, and Three Dimensional Molecular Junctions”*

Abstract:

I will present recent work on inelastic electron tunneling spectroscopy (IETS) in single-molecule transistors, self-assembled molecular monolayer cross-wire junctions, and multilayer molecular cross-wire junctions coordinated with nickel ions. IETS is an unique technique that provides in situ vibrational information for molecular electronic devices. The IET spectrum represents a molecular signature for a molecular device, simultaneously proving that the molecule of interest is present and giving insight into how the charge carriers interact with the molecule. By electrostatically and chemically tuning the molecular electronic level of devices near resonance, we observed significant modification of their vibrational features. We attribute this behavior to the onset of high-order quasi-elastic processes near the vibrational excitation thresholds of a molecular device close to electronic resonance.

Wed., April 11, 2007

4:00 P.M.

304 Robeson Hall