



~~Special Polymer Physics Seminar ~~

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10:00 AM Tuesday
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301 Steidle Bldg.

Electrical and Electromagnetic Responses of Molecules in Confined Geometries - Applications to Molecule-Based Electronic Devices

There has been increasing interest in the past decade in using molecules as active components in electronic devices. A number of fabricated junction structures have been developed to measure I-V behavior including molecular conductance as well as bistable behavior leading to switching and memory. Inherent in these studies are challenges to definitively determine the molecular structure of the embedded molecules and assemblies, especially as a function of applied bias in the case of bistable systems, to control the nature of the electrode-molecule bonding and to develop methods for direct measurements of charge transport dynamics along the molecular frameworks. Since the junctions in the limit reach quasi 1-D (for single molecule junctions) it is necessary to develop techniques that can reach individual molecule level sensitivities and selectively probe the target of interest in complicated multi-material structures. In order to meet these challenges rigorously a collection of different types of complementary probes must be used. In this talk I will discuss the development and application of multiple probes, ranging across scanning tips, in-situ photon and electron scattering and resonant photoelectron spectroscopy.