Physical Chemistry Student Seminar

“Photo-Activation of Single Molecules and Assemblies”

Understanding energy/electron transfer at the molecular level is critical to the rational design and performance improvement of organic optoelectronics and photovoltaics. Scanning tunneling microscope (STM) facilitates measurement of electronic properties with atomic precision. Here, we introduce a custom-built, laser-assisted STM that integrates optical excitation into the tunneling junction. The evanescent field generated by incident laser light excites surface adsorbates on epitaxial gold films, enabling the monitoring of light-induced activities of isolated photoactive molecules under ambient conditions. Our method offers a versatile platform to elucidate the involvement of individual states or local environment that affect charge generation and separation in a C60-tethered 2,5-dithienylpyrrole triad, a molecular donor-acceptor heterojunction, and to correlate the particular molecular orientations with the measured local electronic structure of the anthracene-terminated aromatic thiolates in the tunneling junction.

Presented by

Yuxi Zhao

Prof. Paul Weiss’ group

Department of Chemistry & Biochemistry

University of California, Los Angeles

Thursday, December 18, 2014

12:00 P.M.

2033 Young Hall