University of Pittsburgh

Petersen Institute of NanoScience and Engineering Seminar

Speaker: **Professor Thuc-Quyen Nguyen**
Department of Chemistry and Biochemistry, University of California, Santa Barbara

Title: ***Probing Surface and Internal Nanostructures in Organic Solar Cells***

Time/Date: **12:00 noon, Monday, April 6, 2009**
(refreshments at 12:00noon - 12:15pm)

Place: **Kresge Conference Center, 1175 Benedum Hall**

According to a recent report by the Department of Energy, "world demand for energy is projected to more than double by 2050 and to more than triple by the end of the century." Thus, the development of alternative energy sources is now recognized by government, society and the global community as an urgent need. Sunlight is the most abundant source of energy on Earth and, if harvested efficiently and economically, can address the energy demands in the future. Organic solar cells potentially offer a low cost, large area, flexible, light-weight, clean, and quiet alternative energy source for indoor and outdoor applications. Our research in this area focuses on controlling material processing conditions and designing/synthesizing materials having a broad absorption spectrum and high charge carrier mobility. In parallel with materials synthesis and processing, we have developed characterization techniques to probe nanoscale properties including film morphology and charge transport, to image the donor-acceptor networks laterally and vertically, to assign phase domains to the donor and the acceptor components, and to study interfaces in polymer solar cells. These studies tackle fundamental critical problems associated with emerging organic semiconductor based technologies that generate energy.

Biographical Sketch

Dr. Thuc-Quyen Nguyen received her B.S., M.S., and Ph.D. degrees in physical chemistry from the University of California, Los Angeles, in 1997, 1998, and 2001, respectively. Her thesis research focused on processing and photophysics of conducting polymers using ultrafast spectroscopy under the supervision of Professor Benjamin Schwartz. She was a research associate in the Department of Chemistry and the Nanocenter at Columbia University working with Professors Louis Brus and Colin Nuckolls on molecular self-assembly, nanoscale characterization and devices. She also spent time at IBM Research Center at T. J. Watson (Yorktown Heights, NY) working with Richard Martel and Phaedon Avouris. She joined the faculty of the Chemistry and Biochemistry Department at UCSB in summer 2004. Her current

research interests are electronic properties of conjugated polyelectrolytes, interfaces in optoelectronic devices, charge transport in organic semiconductors, and nanoscale characterization of organic solar cells. Recognition for her research includes the 2005 Office of Naval Research Young Investigator Award, the 2006 NSF CAREER Award, the 2007 Harold Plous Award (one of the UCSB's two most prestigious faculty honors), and the 2008 Camille Dreyfus Teacher Scholar Award. She is the 2009 Alfred P. Sloan Foundation Research Fellow.