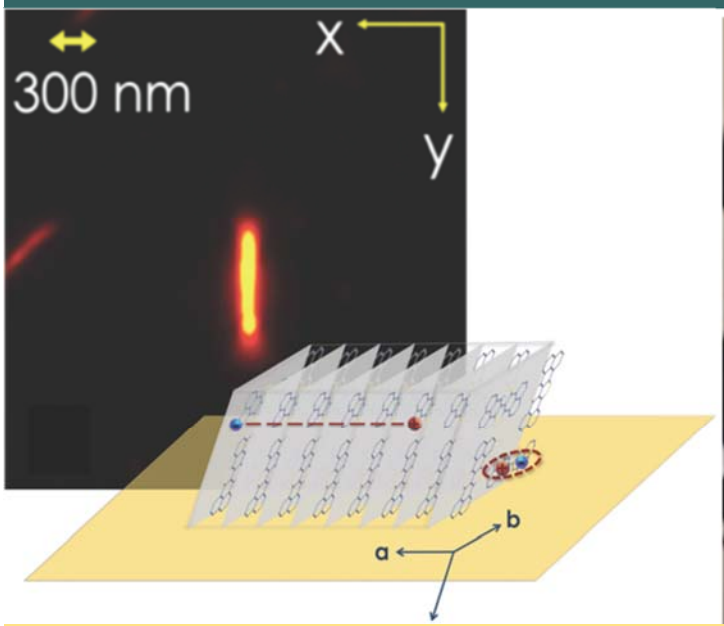
PHYSICAL SEMINAR

"Single nanowire spectroscopy: Probing directional interactions in ordered assemblies of organic semiconductors "



Professor Mike Barnes

University of Massachusetts – Amherst

Department of Chemistry

Co Sponsored by: Department of Chemistry and Materials Science

Monday, October 30th, 4:00pm
Hutchison Hall Room 473
University of Rochester

Abstract:

Our group's research focuses on directional interactions in ordered assemblies of organic semiconductors, with the ultimate goal of controlling charge and/or energy flow in organic optoelectronics. Using tools of single-molecule spectroscopy, our approach is based on isolated crystalline nanowires where the nanowire itself plays a material role analogous to a single molecule, and optical polarization (in either absorption or emission) can be referenced to specific crystallographic directions. Of particular interest are timescales for mixing transverse and longitudinal polarizations which encode information on the (directional) interaction of different intermolecular coupling modes in the assembly. In this talk, I'll summarize some recent work on isolated crystalline nanowires of an interesting small-molecule semiconductor called 7,8,15,16-tetraazaterrylene (TAT, for short) which display several unusual and exciting properties with applications to organic optoelectronics.

Bio: Prof. Barnes received the B.S. degree in Chemistry from California State University, Sonoma (1985), and Ph.D in Chemistry from Rice University (1991) under the supervision of Philip Brooks and Robert F. Curl. He was a postdoctoral associate at Oak Ridge National Laboratory with J. Michael Ramsey, and continued on at ORNL as a Staff Scientist until 2004. He then took an appointment at University of Massachusetts, Amherst where he has a joint appointment in the departments of Chemistry and Physics. He specializes in optical probes of structure and dynamics of nanostructured semiconductor materials.

Host: Professor Lewis Rothberg ● Email: lewis.rothberg@rochester.edu