



PHYSICAL  
SEMINAR  
TUESDAY,  
MAY 10, 2016 4:00 P.M.  
HUTCHISON HALL 473  
DEPARTMENT OF CHEMISTRY  
UNIVERSITY OF ROCHESTER

GUEST SPEAKER:  
PROFESSOR LARS GUNDLACH  
UNIVERSITY OF DELAWARE  
DEPARTMENTS OF CHEMISTRY AND BIOCHEMISTRY,  
PHYSICS AND ASTRONOMY



## “Ultrafast Charge Carrier Dynamics in Solar Energy Relevant Materials”

**Abstract:** Ultrafast Charge Transfer Dynamics at Interfaces is a critical process in surface catalysis, novel electronic applications and solar energy conversion. The fast kinetics (below 100 fs) and the inhomogeneous environment complicate identifying the parameters that dominate the reaction. I will present ultrafast spectroscopic studies of model systems with well-defined variations in excess energy and dipole moment and address the importance of electronic-vibrational coupling for electron transfer. Spatial-resolved Ultrafast Luminescence Dynamics of Single Nanowires: Transparent semiconducting nanowires are an important subject of recent experimental and theoretical investigations because of their potential applications in electronics, opto-electronics, and renewable energy. Charge carrier diffusion and lifetime are the most important parameters for any electronic application. I will show how charge carrier mobility can be extracted from Shockley-Read-Hall coefficients that are taken from contactless measurements on single ZnO nanowires from a new femtosecond wide-field Kerr-gated UV luminescence microscope.

**Host: Professor Todd Krauss, email: [krauss@chem.rochester.edu](mailto:krauss@chem.rochester.edu)**