

2024 SPRING SYMPOSIUM SEMINAR

Friday, April 19 | 3:00 - 4:00 pm | Chem 200

Keynote Speaker: Dr. David A. Blank, University of Minnesota

*Taylor Distinguished Professor & Distinguished University Teaching Professor, Department of Chemistry
Associate Dean for Undergraduate Programs, College of Science & Engineering*

***Capturing Light: Energy and Charge Transfer
in Molecular Dyads, Molecule-Nanocrystal Assemblies and Ionic Liquids***

Energy and charge transfer at a molecular level are at the core of technologies that include the efficient capture, storage, and emission of energy in the form of light. Understanding the relationship between molecular structure and assembly, and the impact on energy and charge transfer, are critical pieces of working toward molecular design principles that can be used to improve sustainable approaches to energy capture and storage. This presentation will examine a set of examples, starting with molecular donor-acceptor dyads, expanding this to molecules bound at the surface of metal oxide semiconductor nanocrystals, and finally to a look at excess electrons created via photodetachment in ionic liquids. We will investigate how structure impacts the observed dynamics, sometimes in unexpected ways, and consider basic questions about the nature and reactivity of excess charges in ionic liquids that are becoming more and more common as the electrolytes of choice in energy related applications. The primary experimental tools are time-resolved spectroscopies combined with spectro-electrochemistry and some computational guidance in the interpretations.



David received his BS in Chemistry from UCLA where he pursued undergraduate research in computational chemistry under the direction of Prof. Emily Carter. He received his PhD from UC Berkeley investigating chemical reaction dynamics using crossed molecular beams and VUV synchrotron radiation as a product probe under the direction of Prof. Yuan Lee. Shifting to condensed phase chemical dynamics, David developed nonlinear time resolved spectroscopic techniques working under the direction of Prof. Graham Fleming at UC Berkeley. In 2000 David started his independent academic career at the University of Minnesota, where he has served as the Director of Undergraduate Studies in Chemistry, the Department Head in Chemistry, and is currently the Distinguished Taylor Professor and Associate Dean for Undergraduate Programs in the College of Science and Engineering. David has won awards in research including the David and Lucile Packard Award in Science and Engineering, and awards in teaching and service including the highest system-wide awards at the University of Minnesota in both categories.