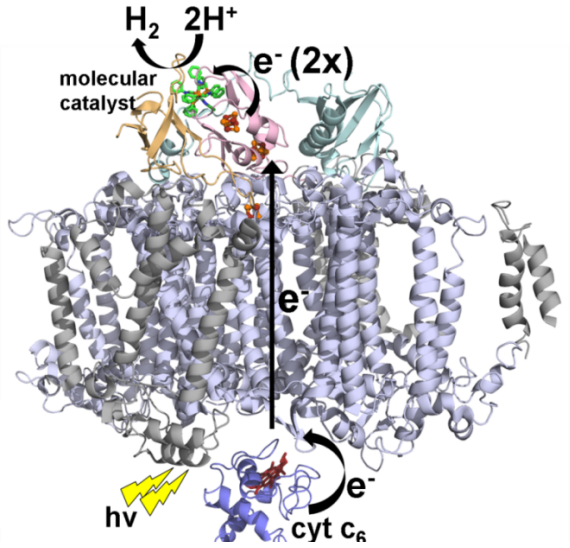
“Photosynthetic-Inspired Systems for Solar Hydrogen Production”

INORGANIC SEMINAR

MONDAY, FEB. 27TH, 2017
4:00 P.M.
HUTCHISON HALL 473
DEPARTMENT OF CHEMISTRY

Guest Speaker:
Lisa M. Utschig
Argonne National Lab



Abstract:
Natural photosynthetic energy research is aimed at resolving fundamental mechanisms of photochemical energy conversion in photosynthetic proteins. These basic studies provide us with insight into how to use Nature’s optimized photochemistry to drive non-native chemical reactions. Currently, we are designing new bio-inspired systems that capture and convert the sun’s energy and store it in the energy-rich bond of hydrogen, a clean, carbon-neutral and renewable energy source. Specifically, we are (1) developing new energy conversion strategies that couple the photon energy, which is efficiently captured as a stabilized charge separation across the native photosynthetic reaction center (RC), to the direct synthesis of hydrogen using synthetic first-row transition metal catalysts and (2) creating a new class of small protein-based photocatalytic complexes that replicate essential design features of RCs and enable the spectroscopic discernment of the structure and processes crucial to solar-driven proton reduction. Our combined effort at the forefront of biochemical and spectroscopic experimental approaches provides an opportunity for breakthroughs in the resolution of fundamental mechanisms for coupling photons to fuels in photosynthetic-inspired hybrid systems, a necessary step forward in the development of optimized systems for solar fuels.

Host: Professor Kara Bren, email: bren@chem.rochester.edu