



RUTGERS
UNIVERSITY

Department of Chemistry and Chemical Biology
presents a

SPECIAL SEMINAR

Wednesday, November 17th at 3:30PM
Wright-Rieman Laboratory
Room 260

Michael R. Wasielewski

*Department of Chemistry and Argonne-Northwestern Solar Energy
Research (ANSER) Center, Northwestern University*

“Integrated Chemical Systems for Artificial Photosynthesis”

Abstract: Natural photosynthesis is carried out by organized assemblies of photofunctional tetrapyrrole chromophores and catalysts within proteins that provide specifically tailored environments to optimize solar energy conversion. Artificial photosynthetic systems for practical solar fuels production must collect light energy, separate charge, and transport charge to catalytic sites where multi-electron redox processes will occur. While encouraging progress has been made on each aspect of this complex problem, researchers have not yet developed self-ordering and self-assembling components and the tailored environments necessary to realize a fully-functional artificial system. The primary goal of our research in this field is to understand the fundamental principles needed to develop integrated artificial photosynthetic systems. These principles include how to promote and control: 1) energy capture, charge separation, and long-range directional energy and charge transport, 2) coupling of separated charges to multi-electron catalysts for fuel formation, and 3) supramolecular self-assembly for scalable, low-cost processing from the nanoscale to the macroscale. The central scientific challenge is to develop small, functional building blocks, having a minimum number of covalent linkages, which also have the appropriate molecular recognition properties to facilitate self-assembly of complete, *functional* artificial photosynthetic systems. In this lecture we will describe our efforts to achieve these goals.

Contact Charles Dismukes (dismukes@rci.rutgers.edu) or Eileen Pagnutti-Kish (eileenpk@rci.rutgers.edu) for additional information