



CNMS DISCOVERY SEMINAR SERIES

Friday, April 8, 2011
11:00 am
Iran Thomas Auditorium, 8600

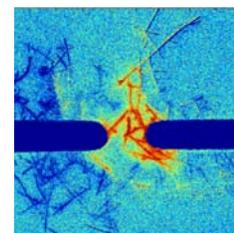
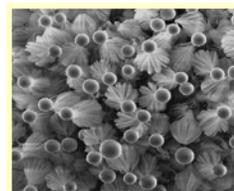
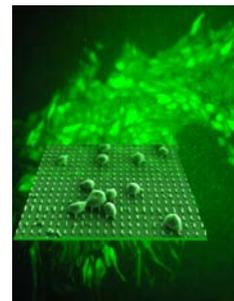
PHOTOCHEMISTRY AT TiO₂ SURFACES Harnessing Sunlight

John T. Yates, Jr.

Department of Chemistry
University of Virginia

Abstract:

The use of TiO₂ to capture sunlight and to convert solar energy to useful purposes is in its 40th year of development. Photons received by the TiO₂ semiconductor excite electron-hole pairs and some of these charge carriers arrive at the surface where they may be utilized: (1) in photovoltaic applications; or (2) to photochemically oxidize organic materials for environmental remediation. The ability of TiO₂ to convert photons to electrical or chemical energy depends on many factors, and our research is directed to the understanding and enhancement of charge transfer at the TiO₂ surface by surface modification. This seminar will cover some of the principles of electronic excitation of TiO₂ and of the enhancement of charge transport to the TiO₂ surface. In particular, the photochemical activation of adsorbed oxygen molecules has been used as a simple model reaction responding to chemical modification of TiO₂ surfaces. Various methods of surface science have been employed to gain understanding of photochemistry on TiO₂ surfaces at the atomic level.



Host: John Wendelken, wendelkenjf@ornl.gov, 865.574.6290

