

DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE
SEMINAR SERIES
FALL 2019

DATE: WEDNESDAY, OCTOBER 9, 2019

LOCATION: TIERNAN HALL LECTURE 1

TIME: 1:00-2:20PM

GUEST SPEAKER

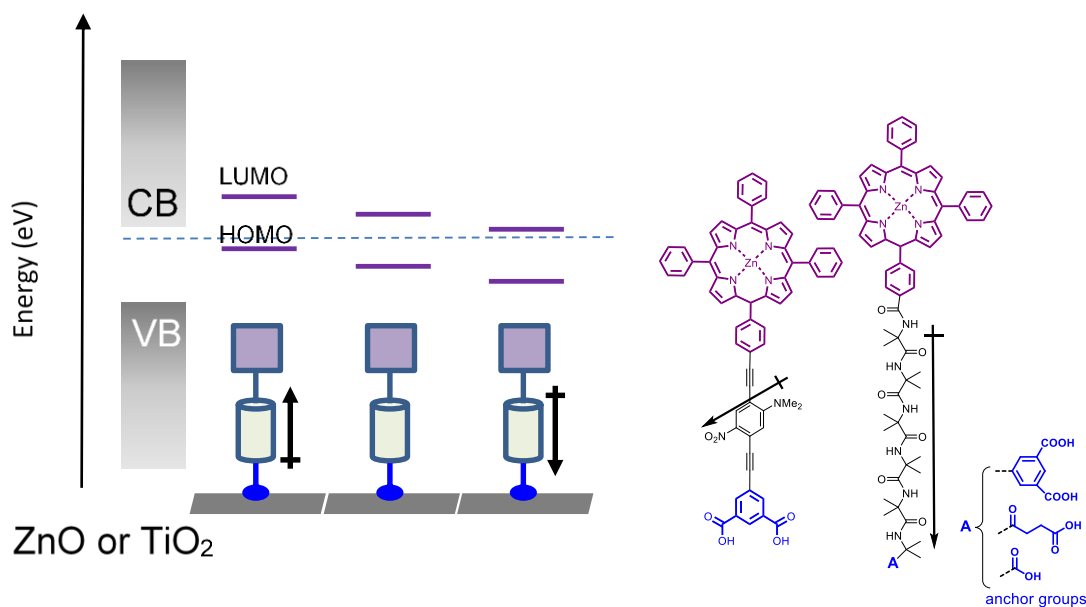
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TOPIC

“Synthetic Design of Porphyrin/Metal Oxide Semiconductor Interfaces for Solar Energy Applications: the influence of surface dipoles”

ABSTRACT

The exchange of charges between photo-excited molecules and a metal oxide semiconductor such as TiO₂ or ZnO is a process of great importance for solar energy conversion research on photovoltaics, artificial photosynthesis, and photocatalysis. Molecular design of chromophore-linker-anchor compounds plays an important role to control, at the molecular level, charge transfer at hybrid organic-inorganic systems and to gain a fundamental understanding of these important interfaces. The talk will address several aspects of molecular design that our group has focused on, including ways to control the energy level alignment between the LUMO and HOMO of Zinc Tetraphenylporphyrin (ZnTPP) chromophores and the conduction band of TiO₂ or ZnO surfaces through the presence of permanent dipoles built in the linker unit.



BIO



Elena Galoppini obtained a *Laurea in Chimica* from the Università di Pisa, Italy, a Ph.D. from the University of Chicago in 1994, and conducted postdoctoral research at the University of Texas at Austin prior to joining the faculty at Rutgers University-Newark in 1996, where she is Distinguished Professor since 2017. She is the recipient of a 2019 Rutgers Board of Trustees Award for Excellence in Research and a Kavli Frontiers of Science Alumna (National Academy of Sciences), and Visiting Professor in several countries in Europe and Asia. Her expertise is in organic synthesis aimed at applications for nanostructured semiconductors. The common theme to the research conducted in her synthetic organic group is the controlled functionalization of nanostructured semiconductor surfaces with chromophores and redox-active molecules, synthetic design of the organic linkers as well as interfacial host-guest chemistry aim at controlling photo-induced heterogeneous charge transfer processes. These studies are of fundamental importance, but also address some of the most important technological challenges in application fields ranging from solar energy conversion, to electrochromic materials and ultrasensitive nanosensors.

Committee members:

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