In celebration of

NATIONAL CHEMISTRY WEEK
THE HUDSON-BERGEN CHEMICAL SOCIETY and
THE CHEMISTRY, BIOCHEMISTRY AND PHYSICS DEPARTMENT OF
FAIRLEIGH DICKINSON UNIVERSITY

Invite you to the lecture

Synthetic Design of Chromophore/Semiconductor Interfaces for Solar Energy Applications

Dr. Elena Galoppini
Distinguished Professor, Rutgers University-Newark
Founding Deputy Editor of *ACS Applied Optical Materials*

Bio: Professor Elena Galoppini graduated with a *Laurea in Chimica* (MS in Chemistry) from the University of Pisa in Italy, earned her Ph.D. degree from the University of Chicago in 1994, followed by a postdoctoral appointment at the University of Texas at Austin. She joined the faculty at Rutgers University-Newark in 1996, where she is now Distinguished Professor. She is the Founding Deputy Editor of *ACS Applied Optical Materials*, the newest addition to the *ACS Applied Materials* Portfolio (launched in June 2022)**.** Prof. Galoppini is an organic chemist and her research focuses on the controlled functionalization of nanostructured semiconductor surfaces with chromophores and redox-active molecules. Interfacial electron transfer processes at these interfaces are fundamentally interesting, but also address important technological challenges in application fields ranging from solar energy conversion to electrochromic materials and sensors.

Abstract: For the design of new photocatalysis and solar devices, and a better understanding of relevant photophysical processes, it is necessary to achieve molecular-level control over molecule/inorganic interfaces. This remains a significant and evolving challenge because of the heterogeneity and complexities associated with surfaces of nanostructured semiconductor materials and electrodes. Chromophore-bridge-anchor

molecules are employed to carry out these studies and to prepare devices, and our group is interested in emerging concepts in the use of the linker, that is the bridge-anchor moiety. The talk will focus on this area, particularly the use of "functionally active linkers", focusing on our recent work perylene-bridge-anchor compounds with one or two linker units. A combination of photophysical characterization and computational analysis in solution and on semiconductor surfaces were used to probe the influence of the number of linkers (one vs. two), their structure (conjugated, saturated) and their substitution position (ortho vs. peri). This study shows that small conformational changes differ between each linker and can have significant influence on interfacial charge transfer. The talk will also address other aspects of molecular design that our group has studied over the years, specifically the influence of interfacial dipoles. Our approaches have demonstrated that it is possible to predictably shift the energy alignment at the chromophore/semiconductor interfaces using linkers with a large and highly oriented molecular dipole.

Date: Thursday, October 26, 2023

Times: 5:00 p.m. Pizza and refreshments
5:30 p.m. Lecture

Place: Dickinson Hall Rm. 4468, Fairleigh Dickinson University, Teaneck, NJ 07666

Free. Reservations required by October 20, 2023, Dr. Mihaela Leonida mleonida@fdu.edu, or Mr. Thomas Drwiega