CHEMISTRY DEPARTMENT SEMINAR

Upcycling Phthalimide Waste to Conjugated Dyes and Bi-redox Organic Molecules for Solar Harvesting and Energy Storage

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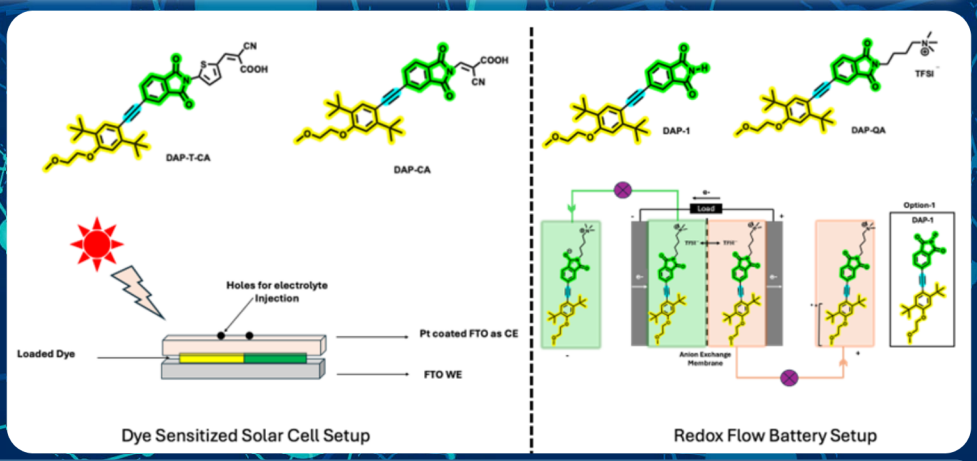
The world is currently facing serious challenges related to energy production and environmental pollution. The transition to a renewable energy-powered global economy is fundamentally limited by the intermittency of solar and wind resources. Furthermore, the accumulation of plastic waste and chemical used in industry e.g. plasticizers, represents rapid growing environmental concern. Many plasticizers added as chemicals to enhance the favorable properties of plastics- cause birth defects, endocrine disruptions, breast cancer and among other health concerns. This research project is designed to upcycle soft plastic wastes into phthalimides, which will serve as active compounds for dye sensitized solar cell (DSSCs) and redox flow batteries (RFBs). DSSCs and RFBs are recognized as promising technologies for their low-cost power conversion and decoupling of energy and power, respectively. This talk will highlight key challenges to the application of plastic-derives phthalimide towards these renewable energy technologies. Specifically, molecular geometry (DSSCs) and functional group sensitivity (RFBs) can compromise phthalimide performance. With this knowledge in mind, we propose molecular design strategies to overcome the respective challenges which could afford unprecedented energy output and molecular stability. If successful, the advances will contribute to the mitigation of environmental pollution while converting its waste products to value-added, organic energy carriers.



April 24th @2 pm – Lopez 106