

**DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE**  
**SEMINAR SERIES**  
**FALL 2022**

**WEDNESDAY, SEPTEMBER 28, 2022**  
**TIERNAN HALL – LECT. HALL 1**  
**1:00PM-2:20PM**

**GUEST SPEAKER**

Dr. Amrita Sarkar  
Assistant Professor  
Department of Chemistry  
Montclair State University  
Montclair, NJ

**TOPIC**

From Nanostructure-to-Batteries: Exploring Polymers & Green Solvents

**ABSTRACT**

Li-ion batteries (LIB) are known to be one of the primary power sources for energy storage and conversion devices, including portable electronics and electric vehicles. State-of-the-art LIB manufacturing process is largely seeking advanced electrode production method with minimum environmental concern. Current manufacturing method is based on slurry casting process where a toxic solvent N-methyl pyrrolidone (NMP) and poly(vinylidene fluoride) (PVDF) polymer binder is used. NMP is declared as a priority substance in USA under the Toxic Substance Control Act (TSCA) for having “unreasonable risk” and requires immediate regulatory action. Likewise, though most of the commercial electrodes are processed by PVDF due to its unparalleled combination of mechanical toughness and electrochemical stability, harmful health effect and environmental persistence of poly & perfluoroalkyl substances (PFAS) comes to the light subsequently, thus require immediate replacement or separation of it from the environment. Sarkar Research Group focuses on developing advanced methods for making sustainable electrodes and PFAS-sorbent using green solvents and custom-made polymer. In this talk, I will elaborate our group’s research finding.

**BIO**

Amrita Sarkar is currently an Assistant Professor in the Department of Chemistry at Montclair State University. She earned her Ph.D. in Organic Chemistry from University of South Carolina in 2018. After graduation, she worked as postdoctoral scientist in the Chemical Engineering Departments at Rensselaer Polytechnic Institute and Columbia University. Her research interests concentrates on exploring custom-made polymer and green solvents in Li ion battery and separation technique.

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