Heavy Metal Pollutants in Samples Collected Along the WNY Waterways

The goal of Dr. Bashir's research group is to develop novel methods for the analysis of heavy metal pollutants in water and soil. Most recently, soil samples in and around the waterways of WNY have been collected and analyzed for lead (Pb) and cadmium (Cd) using a newly acquired instrument, Inductively Coupled Plasma Mass Spectrometry (ICP-MS). This technique allows for the detection and quantification of trace amounts of heavy metals, providing valuable information about sources of contamination.

Analytical/Environmental Chemistry

Inorganic Chemistry

Transition-Metal Substituted Polyoxotungstates (TMSPOs) as Catalysts for Carbon Dioxide Reduction

The goal of Dr. Kozik’s research group is the one-step, multielectron reduction of carbon dioxide (greenhouse gas) to methane (fuel) using TMSPOs as electrocatalysts. In his latest study, Dr. Kozik demonstrates that TMSPOs can be used as efficient catalysts, and becomes sensitive to reactions with other ligands (for example with CO2). The CO2 bound to TMSPOs can store multiple electrons prior to reduction TMSPO, possibly lowering industrial inefficiencies, with the potential to increase selectivity.

Inorganic Photosynthesis and Environmental Analysis

Dr. Mariusz Kozik

Organic Chemistry

Organic Reaction Mechanisms and Synthesis

Dr. Patricia Gregg

The goal of Dr. Gregg’s research group is to discover novel cellulases and design the most efficient cellulase systems in order to understand the metal-ligand bond at a fundamental level.

Physical Chemistry

Spectroscopy of Metal-Containing Molecules

Dr. Philip Sheridan

The goal is to determine the geometric and electronic structure of these molecules in order to understand the metal-ligand bond at a fundamental level.

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