

Canisius Department of Chemistry and Biochemistry Research



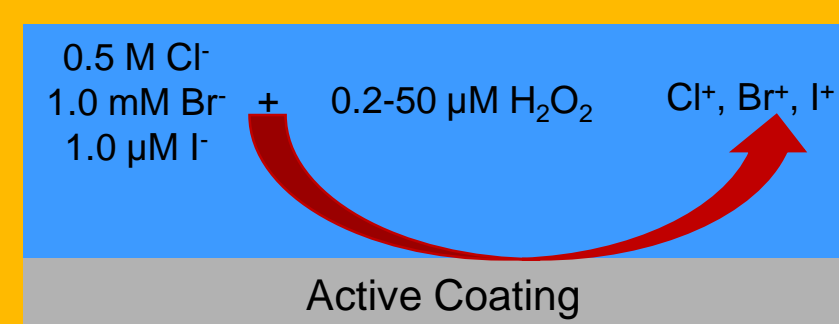
Dr. Corey Damon Biochemistry/Organic Chemistry

Biochemistry of Marine Fouling and Strenuous Exercise

Dr. Damon's research group is interested in the biochemistry of aquatic species; with an emphasis on biofilm formation and the attachment of macrofoulers in the marine environment. A better understanding of the structural biology of these fouling species permits the synthesis of antifouling and fouling release coatings using organically modified silanes. These surfaces take advantage of natural enzymatic processes and metabolism to prevent and/or shed organisms following attachment.



A Vanadium-Dependent Bromoperoxidase from *A. nodosum*
PDB ID: 1QI9



Dr. Damon's group also investigates the effect of strenuous exercise on hematologic and biochemical parameters. The goal is to identify markers that allow the development of a customized nutrient profile for athletes in order to prevent cramping, dehydration, and hyponatremia during and athletic competition and for quick recovery after.



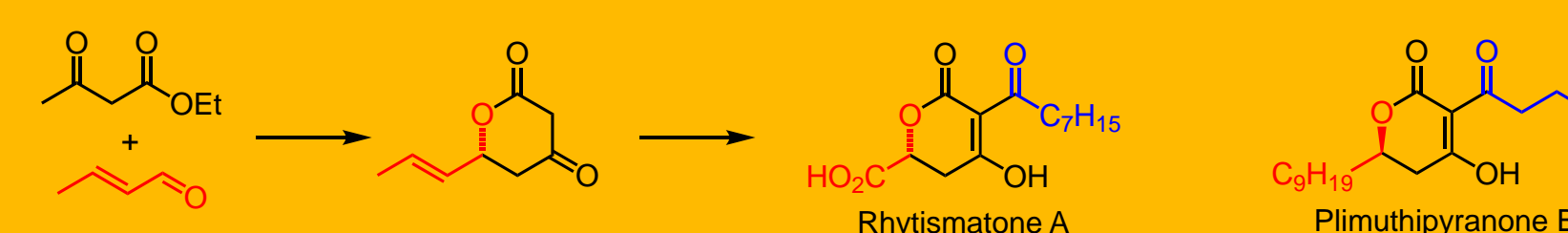
"Marathon de New York - Verrazano Bridge" by Martineric is licensed under CC BY-SA 2.0.



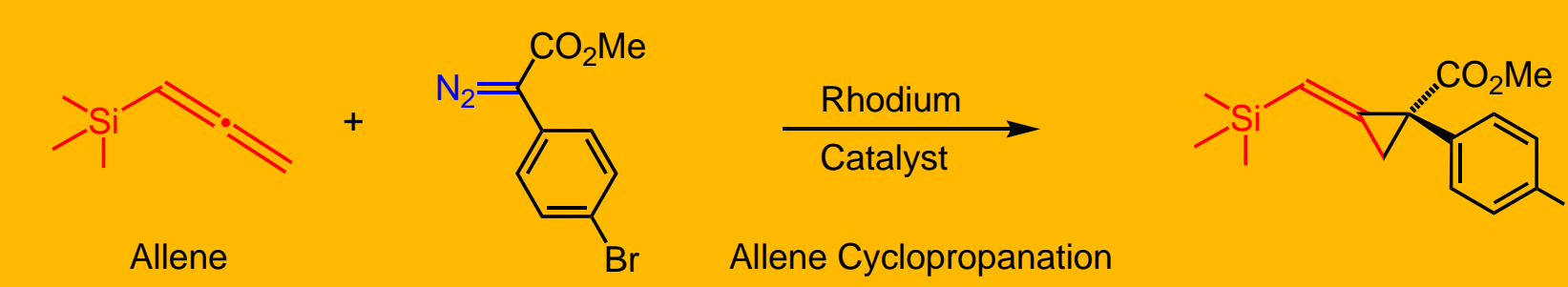
Dr. Timothy Gregg Organic Chemistry

Organic Reaction Mechanisms and Synthesis

Dr. Gregg's research group is exploring organic chemical reactions and molecular structures that will help the scientific community in the development of new medicines and materials. We develop synthesis routes that allow preparation of interesting natural compounds, including anti-fungal and antibacterial compounds.



In past publications, we have demonstrated the use of rhodium catalysts for enantioselective cyclopropanation of allene substrates.



Dr. Peter Schaber Analytical Chemistry

Heavy Metal Pollutants in Samples Collected Along WNY Waterways

Dr. Schaber's research group is interested in developing and utilizing analytical tools to identify 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 Spectrometer (ICP-MS). The aim of these investigations is to identify and locate the sources of contamination.



Buffalo River Soil Samples: Lead (Pb) Measurements 2022

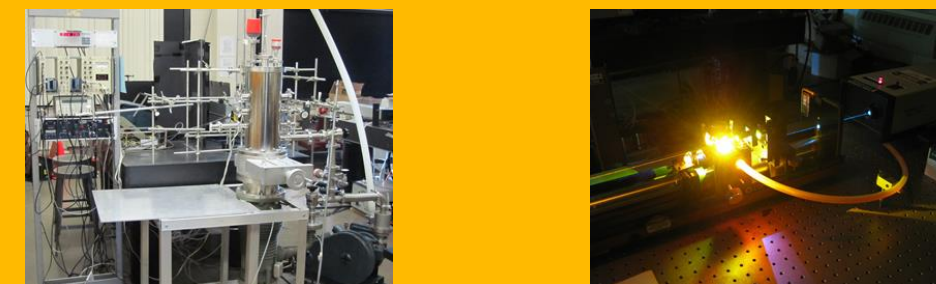
Sample No.	Latitude	Longitude	North/South	Pb (ppm)
7	42.858760	-78.853650	North	394.85
8	42.857450	-78.854730	North	137.17
9	42.857250	-78.854920	North	164.53
10	42.856830	-78.857136	North	199.81
14b	42.862450	-78.853860	South	511.79
17	42.853650	-78.852000	North	194.88
18	42.863630	-78.852950	North	172.26
20	42.862870	-78.856789	North	533.78
37	42.857863	-78.847728	South	191.45
38	42.857863	-78.848828	South	301.90



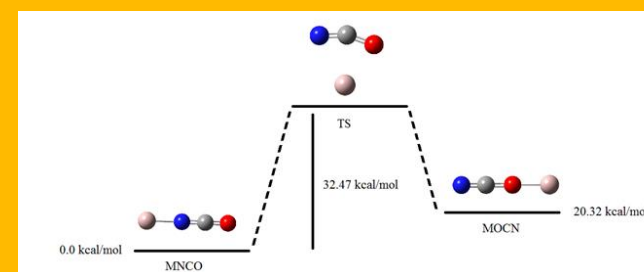
Dr. Phillip Sheridan Physical Chemistry

Spectroscopy and Computational Chemistry of Metal-Containing Molecules

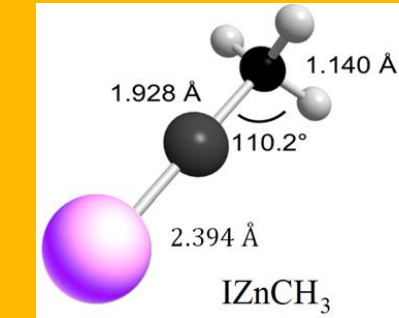
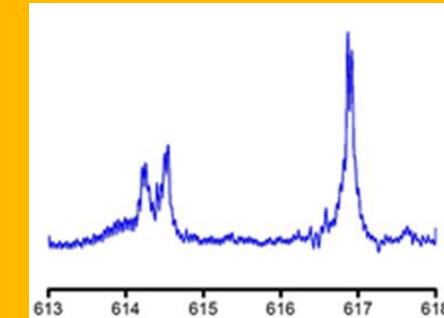
Dr. Sheridan's research group is interested in the characterization of small, metal-containing molecules in the gas phase.



A combination of laser excitation spectroscopy, rotational spectroscopy, and computational chemistry methods are used to study these molecules, which consist of a metal atom bonded to a single ligand.



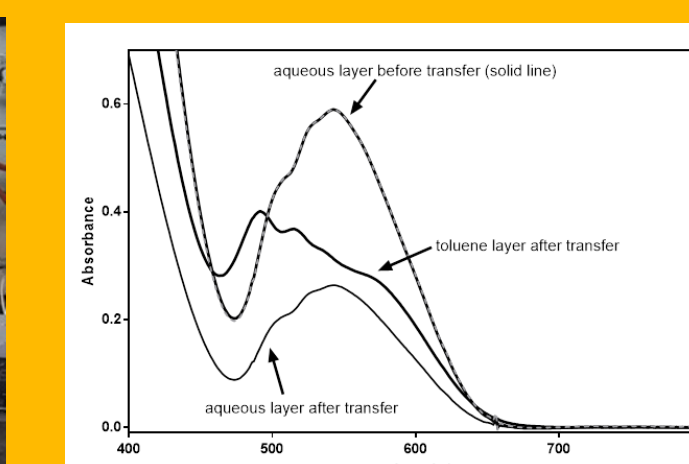
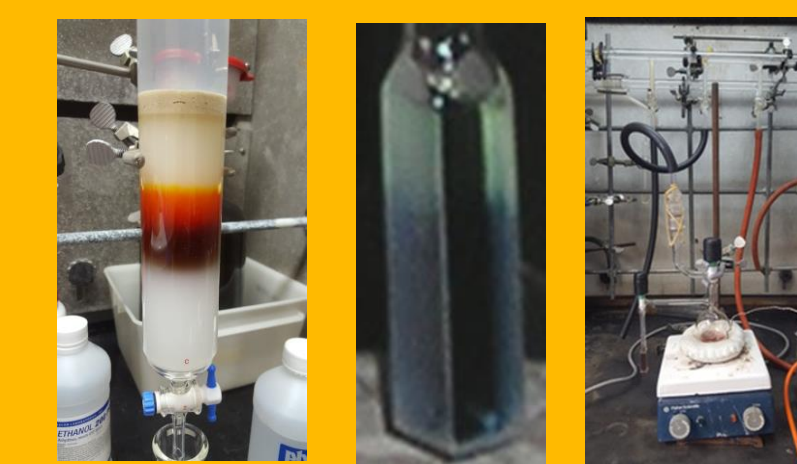
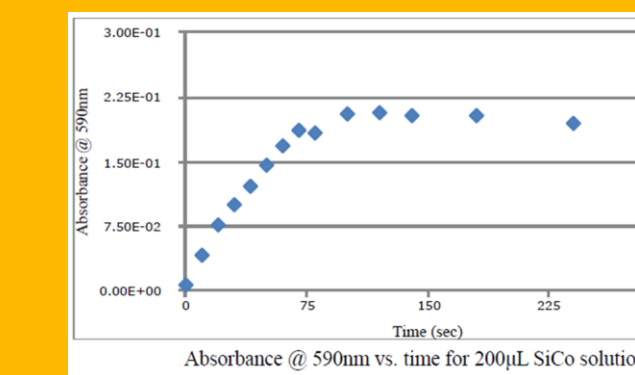
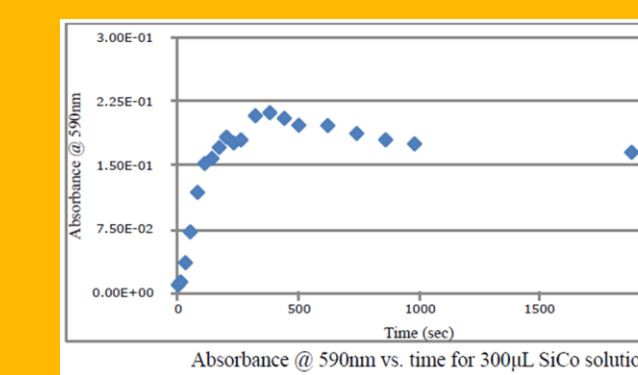
The goal is to determine the geometric and electronic structure of these molecules in order to better understand the metal-ligand bond at a fundamental level.



Dr. Steven Szczepankiewicz Analytical/Environmental Chemistry

Inorganic Photosynthesis and Environmental Analysis

Dr. Szczepankiewicz's research group is interested in developing rugged photoactivated catalysis capable of reducing small, stable molecules such as CO₂. We've developed a strategy to prepare the catalyst in favorable reaction conditions and determined the photoactivation mechanism. We're now investigating the products of CO₂ fixation.



Dr. Szczepankiewicz's group also investigates the prevalence of persistent environmental pollutants in local aquatic habitats and fish populations.