Gregg’s research group is interested in the biochemistry of aquatic species with an emphasis on aquatic biodiversity and the structure of microorganisms in the marine environment. A better understanding of the structural biology of these marine species permits the synthesis of artificial and natural marine metabolites using engineered microbial systems. The group is utilizing computational and experimental techniques to develop and evaluate novel drug targets for marine species.

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 synthetic routes that allow preparation of interesting natural compounds, including and charge and chiral compounds.

In past publications, we have demonstrated the use of natural catalysts for environmentally conscious preparation of small molecules.

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 enzymes 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 ligand.

The goal is to determine the geometric and electronic structure of these molecules in order to understand the catalytic activity of enzymes.

Dr. Steven Szczepankiewicz
Analytical/Environmental Chemistry
Inorganic Photosynthesis and Environmental Analysis

Dr. Szczepankiewicz’s research group is interested in developing natural photosynthetic reactive centers of reducing metal, stable molecules such as CO2. These developed a new class of artificial photosynthetic systems that use light energy to reduce CO2.

In their investigations, they focused on the photosynthetic mechanism, determining the products of CO2 fixation.