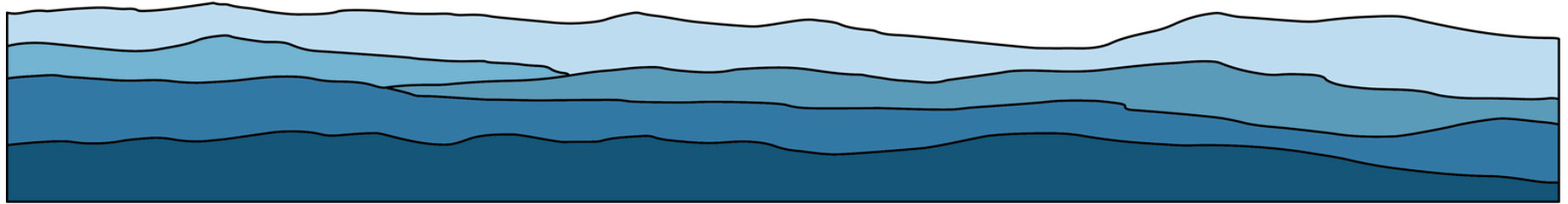


HIGHLANDS IN CHEMISTRY SEMINAR SERIES



March 21, 2025

2:30 PM ET

Hahn Hall North 140

Professor Joseph Cotruvo

The Pennsylvania State University

“Supramolecular Chemistry in the Biological Discrimination of Lanthanides”

The discovery that certain lanthanides are specifically utilized by environmentally abundant microbes has catalyzed the development of biomolecular strategies for selective recovery and separation of rare earth elements (the lanthanides, plus yttrium and scandium) and actinides. In this talk, I will describe my group’s discovery of several dedicated lanthanide-binding proteins involved in lanthanide uptake in bacteria. I will discuss the insights that characterization of these systems has yielded into the coordination chemistry and supramolecular chemistry underlying biology’s ability to differentiate between lanthanides. Finally, I will illustrate how the principles illuminated by these natural systems can be leveraged towards the detection, recovery, and efficient separation of adjacent lanthanides.