WESTERN MICHIGAN UNIVERSITY

The Department of Chemistry Presents:

Dr. Vincent Pecoraro
University of Michigan

"Metallacrowns: From Discovery to Applications"

Metallacrowns are the inorganic analogues of organic crown ethers and have been shown to form a wide array of metal assemblies whose compositions have yielded properties that have been utilized in various areas ranging from metal ion/anion recognition, molecular magnetism, magnetorefrigerants, molecular nanothermometers, white light emissive chromophores and as probes for optical biological imaging. The latter field is growing explosively in recent years due to technological advances related to detection techniques and image treatment. Luminescent probes allow for the visualization and/or quantification of biological objects or events with a high detection sensitivity and resolution at the cellular level. Lanthanide(III)-based complexes are a class of luminescent compounds that possess fascinating and unique optical properties due to the electronic structure of the lanthanide(III) cations (Ln3+) they incorporate. More specifically, Ln3+ exhibit f-f emission bands from the visible to the near-infrared (NIR) range and a number of complementary properties with respect to the fluorescent probes: sharp emission wavelengths that are highly insensitive to the microenvironment, large energy differences between the absorption and emission bands and high resistance toward photobleaching (allowing long term or repetitive quantitative experiments). This lecture will present the identification of these molecules, how they could progressively be developed into a distinct molecular class and then will describe practical applications that are developing based on these remarkable molecules.

Tuesday, September 9, 2025 @ 3 P.M.

1220 Chemistry Building