***Presenter:*** *Dr. Christopher Kotyk* ***Time: 6:00 – 6:30 PM***

***Institution:*** *Chemistry Department, Wheaton College, MA*

***Abstract Title:*** *Luminescence and Electrochemistry of Lanthanide Complexes with Perfluorinated Alkoxide Ligands*

*Abstract*

Historic misconceptions about the rare earth metals (Sc, Y, lanthanides) are that they are scarce and by extension expensive, chemically well-understood, and with their apparently limited range of oxidation states in comparison to transition metals, generally uninteresting. However, recently the lanthanide ions have become well-known for their magnetism, and photophysical properties and in some cases their redox behavior, and are used in lasers, consumer electronics, medical contrast agents, and many other applications. In our research group, we seek to synthesize and isolate new lanthanide-containing species and in characterizing their physical properties, evaluate their utility toward such applications.

Four groups of rare earth complexes, comprising fifteen new compounds, with fluorinated oxygen ligands [K(THF)6][Ln(OC4F9)4(THF)2], **1-Ln** (Ln = La, Ce, Nd, Sm, Eu), [K][Ln(OC4F9)4], **2-Ln** (Ln = Gd, Dy), [K(THF)2][Ln(pinF)2(THF)3], **3-Ln** (Ln = La, Ce, Nd, Sm), and [K(THF)2][Ln(pinF)2(THF)2], **4-Ln** (Ln = Eu, Gd, Dy, Y) have been synthesized and characterized. Single-crystal X-ray diffraction data were collected for all compounds except **2-Ln**. Species **1-Ln**, **2-Ln**, **3-Ln**, and **4‑Ln** are all luminescent (except where Ln = La, Gd, Y) with the solid-state emission of **1‑Ce** being exceptionally blue-shifted for a cerium complex. The redox behavior of **1-Ln** (Ln = La, Ce, Sm, Eu), **3-Ln** (Ln = La, Ce, Sm), and **4-Ln** (Ln = E), were evaluated by cyclic voltammetry, with **1-La** and **3-La** included as controls.

***Presenter:*** *Dr. Dennis Awasabisah* ***Time: 6:30 – 7:00 PM***

***Institution:*** *Biology & Chemistry Department, Fitchburg State University*

***Abstract Title:*** *Heme-quinoline adducts and their role in inhibiting hemozoin formation.*

*Abstract*

Quinoline-based compounds have very important applications ranging from anti-cancer agents, anti-bacterials and antimalarial agents. When used as antimalarials, quinoline-based drugs are believed to inhibit hemozoin formation by interacting with the prosthetic heme group of hemoglobin, thus resulting in the treatment of malaria. The mechanism of the hemozoin inhibition process has been the subject of debate in recent years.

My group’s long term research goal is to study the hemozoin inhibition process, which is an important step to finding effective treatment modalities for malaria. Our most recent research study involves the use of synthetic model compounds to mimic the heme group, and the study of their reactivity with antimalarial drugs. In recent years, my research students I have prepared some stable synthetic heme models, *viz* ruthenium(II) porphyrin complexes and have found them to be reactive with quinoline-based compounds to form heme-quinolinyl adducts. We have characterized the adducts by spectroscopy and obtained some X-ray crystal structures. We have also studied the spectroelectrochemical properties of the heme-quinoline adducts, which suggests porphyrin-centered oxidations. Our data gives insight into the role quinoline-based drugs play in inhibiting hemozoin during the development of the malaria disease.