



Inorganic Chemistry Seminar Series

Tuesday, January 30, 2018, 12:30 pm

Seaver Science Library, Room 150

SSC Auditorium next to the library

Professor Paul G. Hayes

Department of Chemistry and Biochemistry

University of Lethbridge, Lethbridge, Alberta

Designing New Ancillary Ligands for Organometallic Chemistry of the f-Elements

Abstract:

In an effort to prepare organometallic lanthanide and actinide complexes that feature new and unusual properties, we designed and synthesized several families of NNN-pincer ligands comprised of phosphinimine or pyrazole donors attached to rigid aromatic cores. Rare earth complexes of the ligands have been prepared and notably, diverse reaction behavior, such as cyclometalative C–H bond activation, dearomatization and functionalization of ligand pyrimidine rings by 1,5-alkyl migration, and ring-opening insertion, has been observed. The evolution of the design of these pincer frameworks has yielded a series of thermally stable organolanthanide and organoactinide species that are resistant to cyclometalation.

More recently, we have expanded our phosphinimine-containing ligand sets to include a series of bis(phosphaazido) and phosphasalen ligands that are prepared via reaction between the vicinal diazide 1,2-diazidobenzene and the requisite phosphine. The alkali metal salts of these scaffolds react with $\text{UCl}_4(\text{dme})_2$ to afford a wide variety of uranium and thorium complexes. The synthesis, structures and reaction chemistry of these species will be compared and contrasted with the aforementioned pincer complexes.

Hosted by Professor Richard Brutchey

The scientific community is invited

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