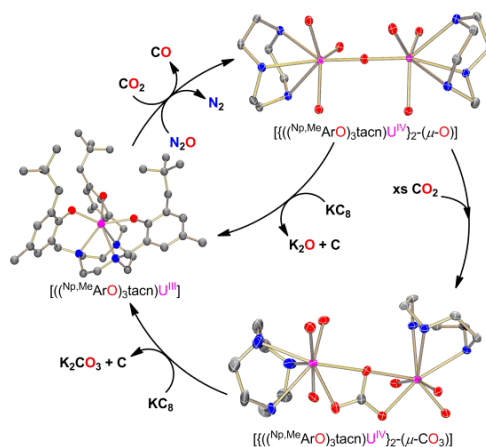


INORGANIC CHEMISTRY SEMINAR

Activation of Carbon Dioxide at Uranium Complexes



by **Professor Karsten Meyer**

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Wednesday, February 20, 2013
Cram Conference Room, 3440 Mol Sci
4:30 pm

Refreshments will be served

Abstract

In our efforts to activate small molecules of industrial and biological relevance, we have turned our attention to coordinatively unsaturated, highly reactive, low- and high-valent uranium coordination complexes. For instance, the hexadentate tris(aryloxo) triaza-cyclo-nonane chelating ligand, $(^t\text{BuArO})_3\text{tacn}^{3-}$, and its sterically more demanding and protective neo-pentyl and adamantyl derivatives have provided access to reactive coordination compounds of uranium, $[\text{R}(\text{ArO})_3\text{tacn}]\text{U}$ ($\text{R} = \text{t-Bu, Neo, Ad}$), in oxidation states III, IV, V, and VI and custom-tailored ligand environments. These complexes display a pronounced selectivity and reactivity towards carbon dioxide and related heteroallene molecules, such as COS and CS₂.

Here, reactions are presented that result in CO₂ coordination, activation, stoichiometric and catalytic “disproportionation” to CO and CO₃²⁻, insertion, and functionalization *via* multiple bond metathesis. Most recently, we also could show that oxalates form under optimized conditions.

It is shown that charge-separated complexes of uranium are particularly reactive species that often lead to unprecedented chemistry.

For additional information, please contact: imai@chem.ucla.edu or x54208