



## Glenn T. Seaborg Center Special Seminar

# Synthesis of Actinide Chalcogenides, Routes Towards Actinide-Ligand Multiple Bonds

*Danil Smiles*

*University of California, Santa Barbara*

**Wednesday, October 21, 2015**

**4:00 pm – 5:00 pm**

**Bldg. 70A, Room 3377**

The need to better comprehend the fundamental chemistry and bonding of the actinides has spurred a renewed interest in actinide-ligand multiple bonding. The study of these moieties has proven integral for understanding the role of covalency and the extent of f-orbital participation in actinide-ligand bonding. Essential to these studies is the synthesis and characterization of molecular complexes with actinide-ligand multiple bonds, and in this area, over the past several decades, significant progress has been made. However, with respect to the heavier chalcogenides, S, Se, Te, there has been a notable shortage of examples. This is due in part to the difficulty of controlling the reaction outcome between traditional chalcogen atom sources and the actinides. Our work has focused on filling this gap by developing new methods for the installation of these ligands in a more controlled manner, including the reductive cleavage of a triphenylmethyl protecting group to afford terminal chalcogenide complexes of uranium and thorium.