Glenn T. Seaborg Center Seminar

Synthesis and Reactivity of Bis(imido)uranium Diiodide: Imido Analogs of the Uranyl Ion

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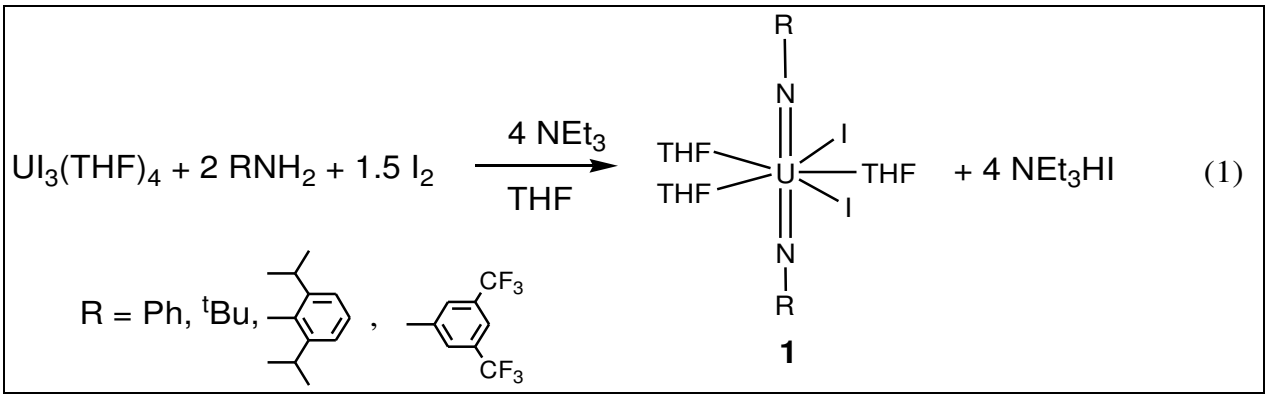
Recently, we have discovered a high yielding, general method for the synthesis of the imido analogs of the uranyl ion (eq 1). The resultant imido complexes are characterized by short U=N bonds and a linear disposition of the imido groups. DFT calculations indicate that there is less positive charge on the metal atom than in the uranyl analogs suggesting a greater degree of covalency in the U=N bond relative to the U=O bond. Furthermore, the calculations also indicate that the U=N bond is composed of two and one interaction suggesting that a U-N triple bond may be the best description of this interaction.

The complexes, **1**, undergo a variety of reactions including neutral ligand displacement, nucleophilic displacement of the iodide ligands and reactions involving the imido groups. The first studies of the chemistry of **1** suggest that the imido groups exert significant electronic and steric effects on the metal center. This chemistry will be discussed in the presentation, as well as the synthesis of mixed oxo-imido species. It is clear that this new class of imido complexes will be a fertile source of previously inaccessible U(VI) chemistry which will lead to a better understanding of the bonding and chemistry of uranium.



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