

Deoxygenation of Amides and Depolymerization of Polyesters and Polycarbonates via the Catalytic Regeneration of Metal-Hydride from Metal-Alkoxides

Moris S. Eisen¹

¹ Instituto de Tecnologia de Israel, Haifa - Israel. chmoris@technion.ac.il

Resumo/Abstract

During the last decade, organoactinide-based complexes have received considerable attention from many scientific researchers. Such a profound interest reflects the principle that actinides possess a number of unique features that cannot be found among other transition metals. Among these unique features, is their very sizeable ionic radii, which gives rise to large formal coordination numbers and unusual coordination geometries. In addition, the presence of 5f valence orbitals is another characteristic of the actinides that differs distinctly from the d-block and the lanthanides elements, as it has been shown that these orbitals are partially responsible for metal reactivities (in contrast to the inert 4f orbitals of the lanthanides). Considering these differences, we will present how to design actinide catalysts to foster unique catalytic transformations; in the presentation, we will show: The effect of the ligand size (five, six, and seven-membered-ring N-heterocyclic iminato ligands) towards the reactivity of the complexes with oxygen-containing substrates. How to tailor a catalytic system for the selective 1,2-regioselective dearomatization of pyridines and other N-heteroaromatics via hydroboration. We will also present the catalytic deoxygenation of amides towards amines. Moreover, we will show how we depolymerize polyesters to the corresponding alcohols and the depolymerization of carbonates and polycarbonates to the corresponding diols and methanol.