Glenn T. Seaborg Center Seminar

Invention of Highly Selective Organo-*f*-element Centered Catalytic Transformations: Mechanism and Selectivity

Tobin Marks

Department of Chemistry, Northwestern University

Wednesday, 2 May 2007, 4:00–5:00pm, 70A-3377

The lanthanides and actinides offer many intriguing and instructive characteristics for stoichiometric and catalytic transformations, including large and incrementally tunable ionic radii, high electrophilicity, high kinetic lability, predictable and constrained formal oxidation states, polar metal-ligand bonding, built-in paramagnetic probes, relatively high abundance, and relatively low toxicity. This lecture describes recent exploratory synthetic, mechanistic, and thermochemical research aimed at inventing new, unusual, and useful transformations mediated by complexes of these elements, and comparing 4f vs. 5f pathways. This includes the addition of element-hydrogen bonds to unsaturated hydrocarbons ("hydrofunctionalization") to effect C-N, C-O, C-P, C-Si, and C-B bond forming processes. The goals are to catalyze and understand highly selective processes involving single additions, cascades of multiple bond fusions, and bond fusions coupled to polymerization processes.

Host: Corwin Booth (510) 486-6079 CHBooth@lbl.gov Admin. Assistant: Lynne Dory (510) 486-5587