



Glenn T. Seaborg Center Seminar

Hybrid materials from the f elements: Synthesis, structure and spectroscopy

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On Sabbatical: Argonne National Lab

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Building 70A, Room 3377

Hybrid materials in general typically consist of an inorganic oxide component coupled to an organic portion via covalent, ionic or van der Waals interactions. The recent literature is rich with examples of such coordination polymer or metal-organic framework (aka 'MOF') compounds. The majority of these materials however, are based on transition metal chemistry, leaving compounds based on f-metals less explored. This presentation will highlight results from our efforts to develop the synthesis, crystal chemistry and ultimately the properties of Ln(III), UO_2^{n+} and Th(IV) based hybrid materials. Structural features absent from d-metal systems (such as spherical coordination environments), provide unique challenges and opportunities for the formation of extended topologies. Further, metal mediated organic reactivity under hydrothermal conditions gives rise to novel structure types based on ligands generated *in situ*. Comments that place these results in the context of environmental issues and hydrothermal syntheses in general will be presented as well.