Department of Chemistry Seminar

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"Atom-Precise Clusters: Synthetic Methodologies and Novel Reactivity"

The regular geometry and non-fluxional behavior of octahedral hexanuclear nanoclusters provide advantages in using these units as building blocks in the construction of functional materials. However, the preparation and modification of these atom-precise clusters is quite limited in comparison to studies conducted on single metal complexes. Research in the Szczepura group has focused on developing the fundamental chemistry of rhenium chalcogenide and molybdenum chloride clusters with a specific emphasis on expanding the breadth of terminal ligands incorporated into these discrete cluster complexes. Studies include developing synthetic routes towards the synthesis of novel cluster complexes, followed by investigation into the reactivity and physical properties displayed, with particular interest in detailing differences in reactivity of ligands bonded to single metal centers vs hexanuclear cluster cores. This presentation will outline the synthesis of rhenium chalcogenide clusters containing various N-donor and C-donor ligands, as well as provide insight into the impact of M6 cluster cores on the reactivity of coordinated (terminal) ligands. Key takeaways include activation of coordinated nitriles by the [Re6Se8] 2+ cluster core as well as unexpected reactivity of coordinated acetylide ligands.

Wednesday, April 29, 2026
12:30 pm, Chemistry 412
Refreshments 12:15 pm

Stony Brook University