

Chemistry Seminar

Friday, October 15 @ 3:15 pm

WBH 3022

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“Synthesis and Reactivity of Novel Dirhodium Complexes”

Abstract: Dirhodium(II,II) paddlewheel (RhII) complexes can mediate a number of transformations through the catalytic transfer of carbenes from diazo precursors. One can control the degree of reactivity and selectivity of these reactions by modifying bridging ligands surrounding the metal center. While general strategies for ligand design have largely focused on bridging ligands, additives in these reactions have also been observed to affect the reactivity and selectivity of the catalyst. It is speculated that coordination to the axial sites of the catalyst is responsible for the perturbations in catalyst performance. While there are current research efforts to probe the benefits of axial coordination, there is still need for robust methods to clarify their structural and electronic influence on catalyst reactivity and product selectivity. We are investigating this through the synthesis of novel RhII complexes with modified bridging ligands that contain tethered Lewis basic groups capable of coordinating to the axial sites of the complex. The complexes were then evaluated with known diazo-mediated reactions to provide broader insight into the potential effects of tethered axial coordination. This presentation will also discuss our efforts to develop a chromogenic detector based on RhII complexes. It is well studied that RhII complexes can bind a variety of neutral and anionic ligands at its electrophilic active site, which induces a chromogenic response depending of the identity of the incoming ligand. We aim to exploit this feature to detect organophosphate nerve agents based on their by-products.



Masks are mandatory