Inorganic Seminar

Tethered Axial Coordination as a Control Element on Dirhodium Paddlewheel Complexes

Prof. Ampofo Darko
University of Tennessee
Host: Prof. John Berry

Dirhodium(II,II) paddlewheel (Rh^{II}) complexes can mediate a number of transformations through the catalytic transfer of carbenes from diazo precursors. The reactivity and selectivity of these reactions are modulated partly by the modification bridging ligands surrounding the metal center, but the axial sites of the catalysts are often overlooked as a control element. This presentation will detail our current research efforts to probe the benefits of axial coordination by designing Rh^{II} complexes with tethered Lewis basic groups onto traditional bridging ligands. In initial studies, thioether ligands proved to be the most robust Lewis base when tethered to oxazolindinate or carboxylate bridging ligands. The novel complexes were then used in diazo-mediated cyclopropanation reactions, Si−H reactions, and C−H insertion reactions. The results of the experiments, along with spectroscopic and computational analyses, provided insight into the role that tethered axial coordination plays in diazo-mediated reactions. This presentation will also discuss our efforts to develop a chromogenic detector based on Rh^{II} complexes to detect organophosphate nerve agents by their hydrolysis by-products.

DATE: Wednesday, March 2nd, 2022
TIME: 3:30 pm in the Learning Studio, Room 1435

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