

ORGANIC SEMINAR

Catalytic Asymmetric Reductive Coupling Reactions Highlighting a Cobalt-to-Zinc Transmetalation

Hayden Bishop

Graduate Student (Uyeda Group), Purdue University



Abstract: Transition-metal-catalyzed reductive coupling reactions are attractive methods in organic synthesis that offer a straightforward and atom economical approach for C–C bond formation. These methods often use reductants such as H₂ or a H₂ surrogate to form the final product. As an alternative to this hydrogenolysis pathway, we demonstrate a cobalt-to-zinc transmetalation to afford chiral zinc metallacycle products. These products serve as versatile functional handles which can undergo further carbon–carbon and carbon–hetero atom coupling reactions. Mechanistic studies suggest that the key transmetalation step occurs between a Co(II) species and ZnCl₂. Additionally, a third π component has been introduced to the reductive coupling reaction to afford chiral β 2,3–amino acid derivatives.



Tuesday, January 28th, 2025



4:30 pm



WTHR 104