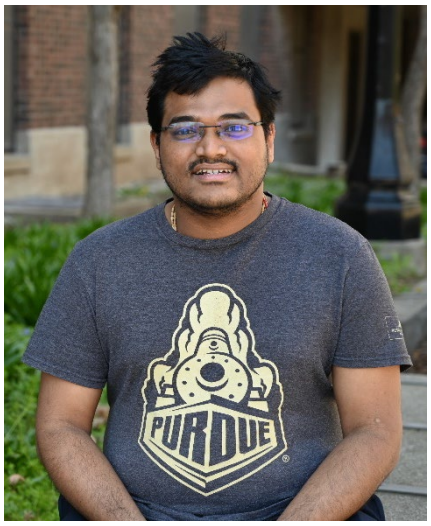
INORGANIC SEMINAR

Tuesday, April 16, 2024

12:30 PM, BRWN 4102

"Cobalt Catalyzed C-H Borylation of Arenes and Heteroarenes"



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Abstract: Transition metal catalyzed C-H borylation offers a powerful synthetic strategy to convert inert C-H bonds into various organoborane compounds which have further downstream importance in construction of complex molecular architectures in pharmaceutical industry. These organoboranes represent a versatile handle for the introduction of a wide range of functional groups through subsequent transformations. Transition metal catalysts based on palladium, rhodium, and iridium have been developed to facilitate borylation reactions under mild conditions, making the process more practical and widely applicable. However, the use of these expensive trace metal-based catalysts has negative environmental impacts, toxicity issues, making it economically unfeasible for many applications. In this regard, cobalt catalysts provide a more sustainable opportunity by reducing reliance on scarce and expensive metals, as they are earth-abundant and cost-effective, making it an attractive alternative to precious metals like iridium commonly used in C-H borylation reactions, without compromising on the reactivity and selectivity of C-H borylation. In this seminar, we will discuss several pincer ligands based cobalt catalysts that have been developed in the past decade for C-H borylation of various arenes and heteroarenes, including their detailed mechanistic investigations.

PURDUE UNIVERSITY

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