Ph. D. Open Seminar

Department of Chemistry, IISER Bhopal

Title of Thesis**: Enantioselective Synthesis of Substituted oxa-Heterocycles *via* Intramolecular oxa-Michael Reaction of alkoxyboronate using cinchona alkaloid based organocatalysts.**

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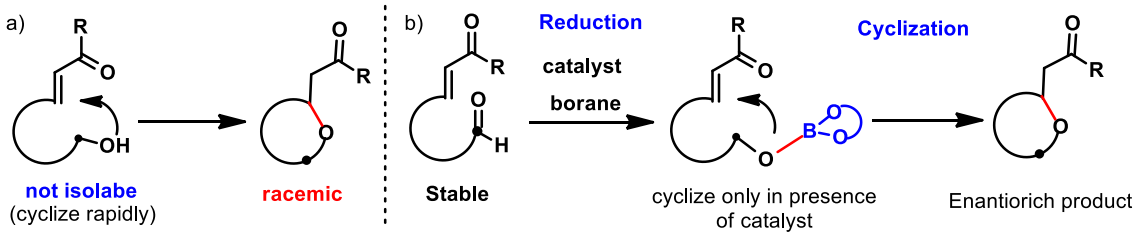
Date: **July 14, 2016** **Time-4:00 PM** Venue**: AB-II, Room No. 401**

Abstract: oxa-Michael addition is one of the most widely applied and versatile methods in organic synthesis, providing an efficient access to oxygen-containing heterocycles which are often found within the natural products. However, in spite of the progress achieved, there exists still few drawbacks for the development of asymmetric variants of intramolecular oxa-Michael addition reactions arising mainly because of the rapid uncatalysed cyclizations resulting in racemic product (Scheme 1a).[1]



Scheme 1: Schematic representation of alkoxyboronate strategy

On the other hand, chiral 1-substituted-1,3-dihydroisobenzofuran moieties are important scaffolds in many natural products and drug molecules.[2] Despite of their importance, the enantioselective synthesis of these important molecules has not been achieved and still a challenge. In my talk, I would describe an "oxa-Michael addition *via* alkoxyboronate intermediate" strategy to avoid the undesired self-cyclization utilizing cinchona alkaloid based squaramide bifunctional catalysts (Scheme 1b). Using this strategy, I would describe the enantioselective synthesis of 1-substituted 1,3-dihydroisobenzofuran and corresponding six membered 1- and 2-substituted isochromans from stable starting materials at ambient reaction conditions.[3,4]

References:

1. Nising, C. F.; Bräse, S. *Chem. Soc. Rev*. **2012**, *41*, 988.
2. Keller, M. B. *J. Clin. Psychiatry.* **2000**, *61*, 896.
3. **Ravindra, B.**; Das, B. G.; Ghorai, P. *Org. Lett*. **2014**, *16*, 5580.
4. **Ravindra, B.**; Maity, S.; Das, B. G.; Ghorai, P. *J. Org. Chem*. **2015**, *80*, 7008.
5. **Ravindra, B.**; Saha, M.; Ghorai, P. *manuscript under preparation.*