

## PhD Open Seminar

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Speaker: Shailesh Kumar (PhD Advisor: Dr. Sangit Kumar)

Topic of Seminar: Carbon-carbon and carbon-chalcogen bond construction: Access to  $\beta$ -(nitroaryl)-indoles, dithioacetals and ebselenol antioxidants

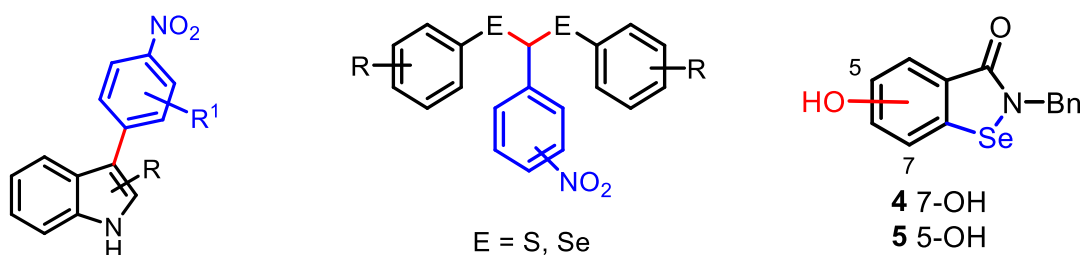
Date: September 1, 2016

Time: 4.00 PM

Venue : AB-II (401)

### Abstract

Biaryls and chalcogen-containing molecules serve important functions in general synthetic chemistry, as well as applications in the pharmaceutical industry and in material science. Transition metal catalyzed and transition metal-free cross-coupling reactions have been widely recognized for the construction of these carbon-carbon and carbon-chalcogen bonds.<sup>1</sup>



This presentation will be focused on my doctoral research work which is based on carbon-carbon and carbon-chalcogen bond formation. We have developed a mild and simple oxidative cross coupling protocol for the synthesis of  $\beta$ -arylated indoles and its synthetic applications towards fused indoloindoles and biindoles.<sup>2</sup> We have also developed a mild method for direct C( $sp^3$ )-H functionalization to access dithioacetals.<sup>3</sup> In continuation of our work on organoselenium compounds, we have successfully synthesized novel organoselenium compounds ebselenols which have exhibited remarkable radical trapping and peroxide decomposing antioxidant activity.<sup>4</sup>

### References:

1. (a) Dong, V. M.; et al. *Chem. Rev.* **2011**, *111*, 1215. (b) Beletskaya, I. P.; Ananikov, V. P. *Chem. Rev.* **2011**, *111*, 1598. (c) Antonchick, A. P.; et al. *Chem. Eur. J.* **2015**, *21*, 14678.
2. **Kumar, S.**; Rathore, V.; Verma, A.; Prasad, C. D.; Kumar, A.; Yadav, A.; Jana, S.; Sattar, M.; Meenakshi, Kumar, S. *Org. Lett.* **2015**, *17*, 82.
3. **Kumar, S.**; Kadu, R.; Kumar, S., *manuscript submitted*.
4. **Kumar, S.**; Yan, J.; Poon, J.-f.; Singh, V. P.; Lu, X.; Karlsson Ott, M.; Engman, L.; Kumar, S. *Angew. Chem. Int. Ed.* **2016**, *55*, 3729.

*All are cordially invited to attend*