



Université de Montréal, Montréal, QC, Canada

THIRD INTERNATIONAL SYMPOSIUM
ON C-H ACTIVATION

May 30 – June 2, 2016

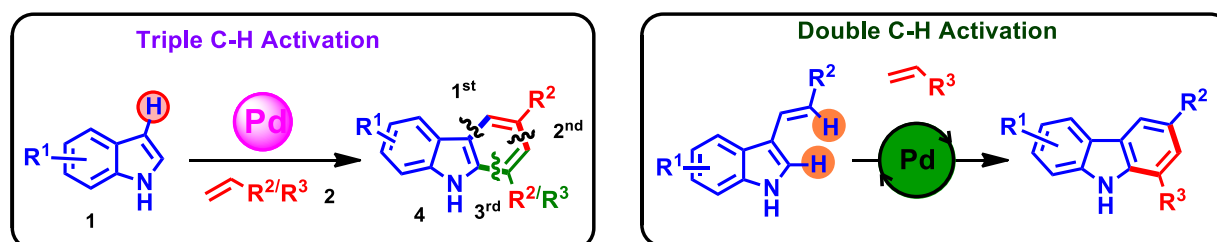
OR20 – Novel Approach to Functionalized Carbazoles from Indoles/Styrylindoles via Pd(II)-Catalyzed Triple/Double C–H Functionalization

Akhilesh Kumar Verma*

Department of Chemistry, University of Delhi, Delhi-110007, India

E-mail: averma@acbr.du.ac.in

Direct C–H bond functionalization, and cross-coupling reactions are considered to be among the most valuable and powerful tools for constructing C–C bonds in the synthesis of complex molecules.¹ The Fujiwara-Moritani (oxidative Heck)² reaction was discovered in 1967; however, it was unnoticed for a long time due to the lack of the regioselective control. In continuation of our ongoing work on the coupling reactions using in-house developed ligands, we will discuss our recent success on the synthesis of highly functionalized carbazoles from NH-indoles/(*E*)-3-styryl-1*H*-indoles via palladium-catalyzed triple/double successive C–H activation.³



References

- (a) F. Glorius *Nature Chem.* **2013**, *5*, 369. (b) Yu, D.-G.; Azambuja, F. D.; Glorius, F. *Angew. Chem. Int. Ed.* **2014**, *53*, 2754. (c) Liu, C.; Han, X.; Wang, X.; Widenhoefer, R. A. *J. Am. Chem. Soc.* **2004**, *126*, 3700.
- (a) Moritani, I.; Fujiwara, Y. *Tetrahedron Lett.* **1967**, *8*, 1119. (b) Fujiwara, Y.; Moritani, I.; Matsuda, M.; Teraniahi, S. *Tetrahedron Lett.* **1968**, *9*, 3863. (c) Fujiwara, Y.; Moritani, I.; Danno, S.; Asano, R.; Teranishi, S. *J. Am. Chem. Soc.* **1969**, *91*, 7166.
- (a) Verma, A. K.; Kesharwani, T.; Singh, J.; Tandon, V.; Larock, R. C. *Angew. Chem. Int. Ed.* **2009**, *48*, 1138. (b) Verma, A. K.; Jha, R. R.; Chaudhary, R.; Tiwari, R. K.; Reddy, K.S.K.; Danodia, A. *J. Org. Chem.* **2012**, *77*, 8191. (c) Verma, A. K.; Joshi, M.; Singh, V. P. *Org. Lett.* **2011**, *13*, 1630. (d) Joshi, M.; Patel, M.; Tiwari, R.; Verma, A. K. *J. Org. Chem.* **2012**, *77*, 5633. (e) Verma, A. K.; Jha, R. R.; Chaudhary, R.; Tiwari, R. K.; and Danodia, A. *Adv. Syn. Cat.* **2013**, *355*, 421-436. (f) Verma, A. K.; Danodia, A. K.; Saunthwal, R. K.; Patel, M.; Choudhary, D. *Org. Lett.* **2015**, *17*, 3658-3661. (g) Saunthwal R. K.; Patel, M.; Kumar, S.; Danodia A.K.; Verma A. K. *Chem. Eur. J.* **2015**, *21*, 18601-18605.