

Highly Regioselective C–H Functionalization of *N*-Chlorobenzamides Enabled by Transition Metal Catalysis with Vinylsilanes and 1,3-Diynes

Arijit Ghosh, Amit B. Pawar*

School of Chemical Sciences, Indian Institute of Technology, Mandi,
Himachal Pradesh -175075, India

Email: D20079@students.iitmandi.ac.in

We have developed highly regioselective [4+2] annulation of *N*-chlorobenzamides with 1,3-diynes and vinyl silane to access biologically and synthetically useful isoquinolones using readily available, inexpensive ruthenium and cobalt catalysts.¹ The devised approach works efficiently under redox-neutral conditions at room temperature without the requirement of any external oxidant. These reactions are also applicable for a variety of substrates with diverse functionality. Further, we demonstrated the synthetic utility of the synthesized isoquinolones and dihydroisoquinolones derivatives by subjecting them to various transformations. A series of mechanistic experiments were also conducted to investigate the reaction mechanism in both cases.

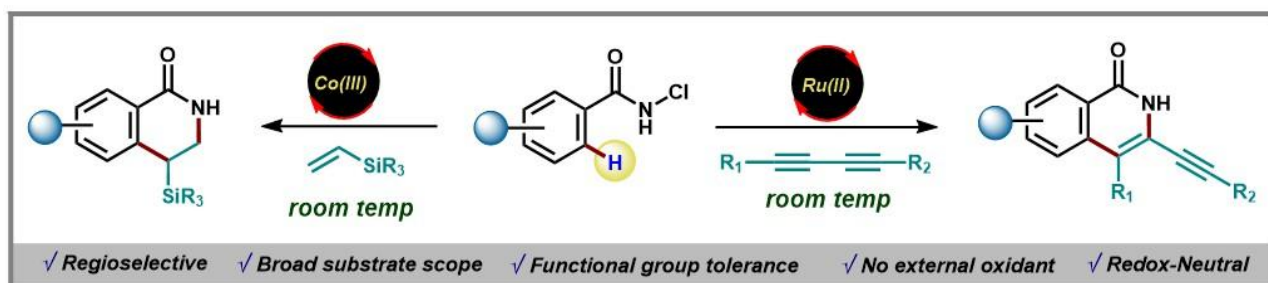


Figure 1. Transition Metal-Catalyzed highly regioselective C-H functionalization of *N*-chlorobenzamides with 1,3-diynes and vinyl silanes.

References:

1. (a) Ghosh, A.; Sapkal, G. T.; Pawar, A. B. *J. Org. Chem.* **2023**, 88, 4704. (b) Ghosh, A.; Rana, T.; Bhaduri, N.; Pawar, A. B. *Org. Lett.* **2023**, 25, 7878. (c) Rajput, J.; Ghosh, A.; Pawar, A. B.; Mondal, B. *J. Org. Chem.* **2024**, 89, 6838.