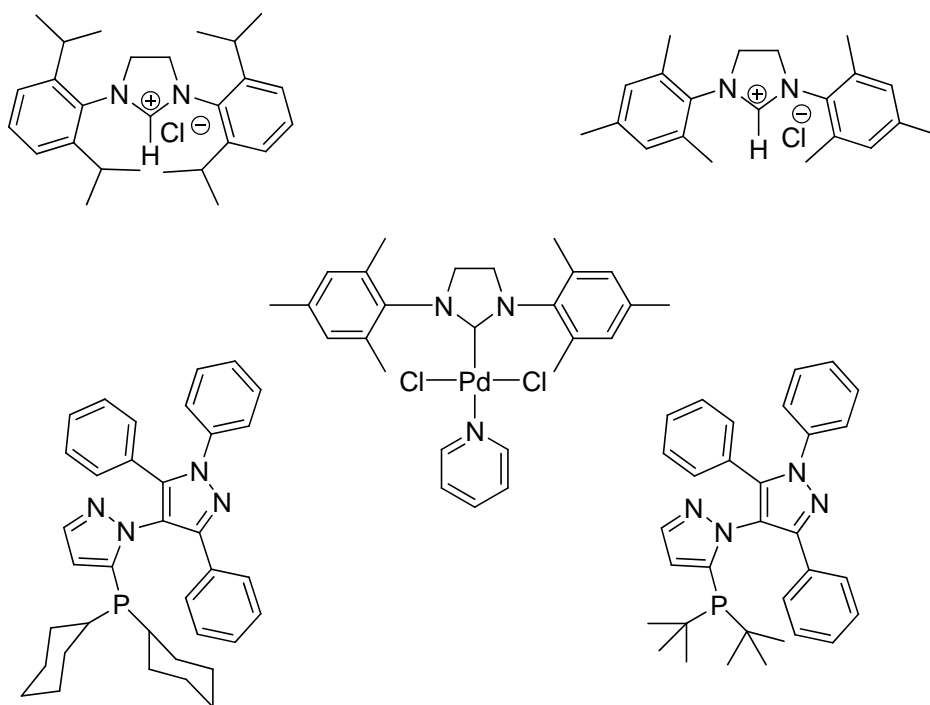


## Carbon-Carbon and Carbon-Heteroatom Bond Formation

The syntheses of pharmaceutical products inevitably require the formation of C-C and C-X bonds. These procedures may require the coupling of aryls, alkyls or vinyls with carbon or heteroatom based substrates. Access to a range of ligands, catalysts and process know-how is the key to successful coupling syntheses. Kamal Pharmachem has an extensive portfolio of such bond-forming technologies to meet the needs of synthetic chemists. Ligands include Bippyphos, N-heterocyclic carbenes (NHC), phosphines and aminophosines. A variety of preformed catalysts is also available, or can be customized on demand.



### References:

- 1) *N-Heterocyclic Carbenes in Synthesis*, ed. S. P. Nolan, Wiley-VCH, Weinheim, 1<sup>st</sup> edn, 2006.
- 2) So, C. M.; Lee, H. w.; Lau, C. P.; Kwong, F. Y. *Org. Lett.* 2009, 11, 317.
- 3) Guo, M.; Jian, F.; He, R. *Tetrahedron Lett.* 2006, 47, 2033.