Catalyst-Controlled Selective Amination Reactions

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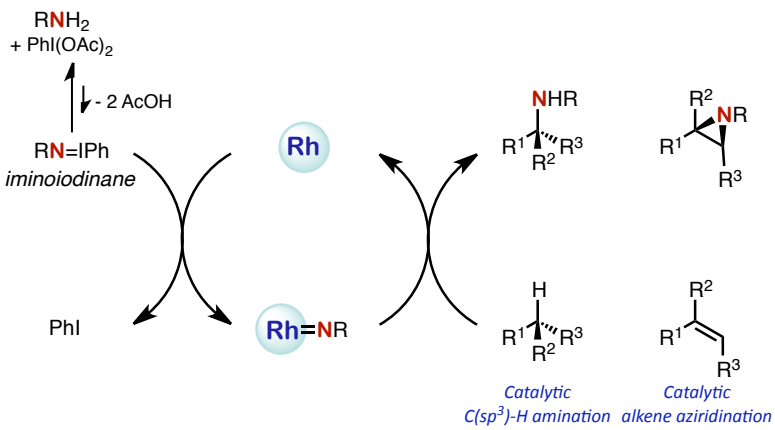
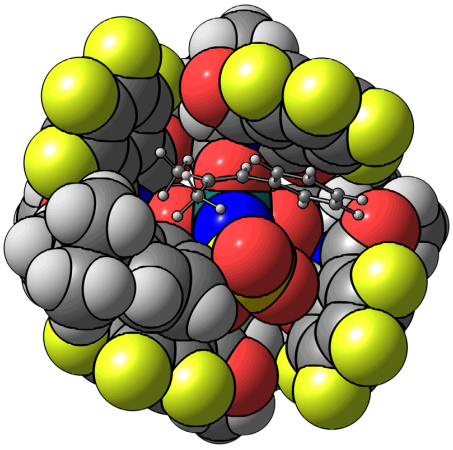
The nitrogen atom is of prime importance in nature and life sciences. A recent study revealed that 84% of the FDA approved drugs contain at least one nitrogen atom.[1] The importance of nitrogen has translated into the search for several C-N bond forming reactions.[2] Among these methods, the development of catalytic nitrene additions culminated in the discovery of efficient transformations for the direct functionalization of C(sp^3)-H bonds and the aziridination of alkenes. Particularly, synthetically useful methods were reported through the combination of hypervalent iodine chemistry and dirhodium(II) catalysis.[3]



Despite these achievements, the issues of enantioselectivity and site-selectivity remain to be addressed in catalytic INTERMOLECULAR nitrene additions, with the aim to design a streamlined access to a large variety of enantiopure amines. In this lecture, we will give an overview of our latest investigations dedicated to the design of new rhodium-bound nitrene species that led to design catalyst- and reagent-controlled selective C-N bond forming reactions.[4]



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