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IL03 – Metal-Free Catalysts for the Borylation of Heteroarenes

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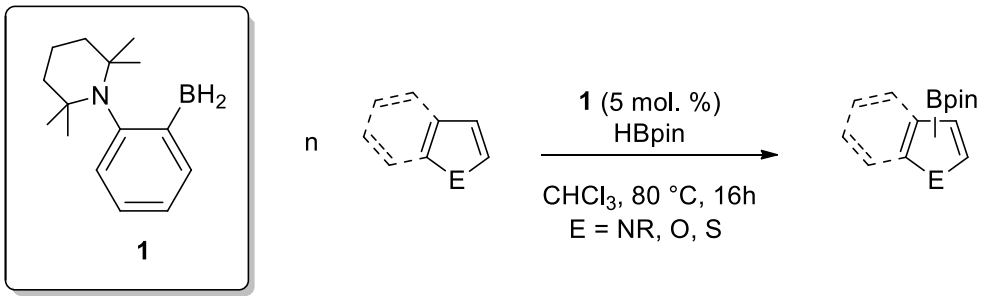
In the past decade, "frustrated Lewis pairs" (FLPs) have been shown to be excellent candidates to replace transition metal complexes in many important chemical transformations.[1] The combination of geometrically or sterically hindered Lewis acid and base pairs leads to very active sites that can activate several types of bonds. We demonstrated recently that species 1-TMP-2-BH_2-C_6H_4 can be used as a catalyst for the borylation of heteroarenes. Experimental evidences suggest that the rate determining step is the activation of a C_{sp2}-H bond by the FLP.[2] This presentation will describe the influence of the catalyst structure on the borylation of furanes, pyrroles and thiophene derivatives, the discovery of air- and water-stable precatalysts for this reaction, and the possibility of such species to activate C_{sp3}-H bonds.



References

1. Stephan, D. W. *J. Am. Chem. Soc.* **2015**, *137*, 10018-10032.
2. Légaré, M.-A.; Courtemanche, M.-A.; Rochette, É.; Fontaine, F.-G. *Science* **2015**, *349*, 513-516.