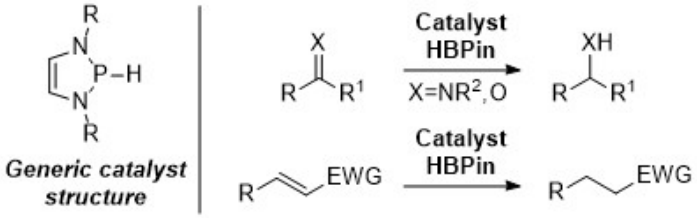
Reductive Transformations Under 1,3,2-Diazaphospholene Catalysis

J. H. Reed[1], S. Miaskiewicz[1], P. A. Donets[1], C. C. Oliveira[1], N. Cramer[1]*

[1]Laboratory of Asymmetric Catalysis and Synthesis, EPF Lausanne

Organocatalysts offer complementary reactivity to transition metal based catalysts, while still addressing the fundamental issues of reaction efficiency and stereoselectivity. We have investigated a nascent class of organocatalysts, namely, the 1,3,2-diazaphospholenes and found that they enable a variety of reductive transformations.[1,2]



By varying the exocyclic substituents on these catalysts, the reactivity can be modulated.[3] Furthermore, by introducing chiral groups onto these positions, we have shown that these reactions can be rendered enantioselective.

[1] Dietrich Gudat, Asadollah Haghverdi, Martin Nieger, *Angew. Chem. Int. Ed.* **2000**, *39*, 3084-3086
[2] Che Chang Chong, Hajime Hirao, Rei Kinjo, *Angew. Chem. Int. Ed*. **2015**, *54*, 190-194
[3] Matt Adams, Chieh-Hung Tien, Blake Huchenski, Michael Ferguson, Alexander Speed, *Angew. Chem. Int. Ed.* **2017**, *56*, 1-5