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Cooperative Catalysis: Combining an Achiral Metal Catalyst with a Chiral Brønsted Acid Enables Highly Enantioselective Hydrogenation of Imines
Chem. Eur. J. **2013**, *19*, 14187–14193.

Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

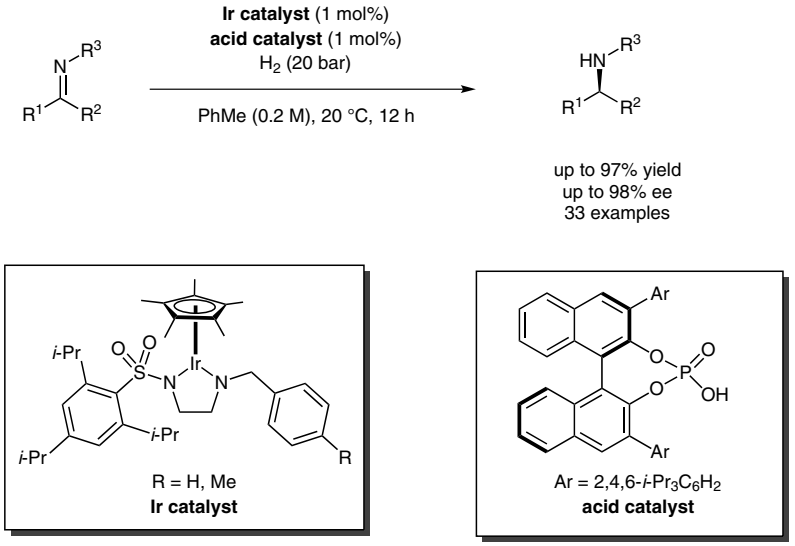
Key words

iridium

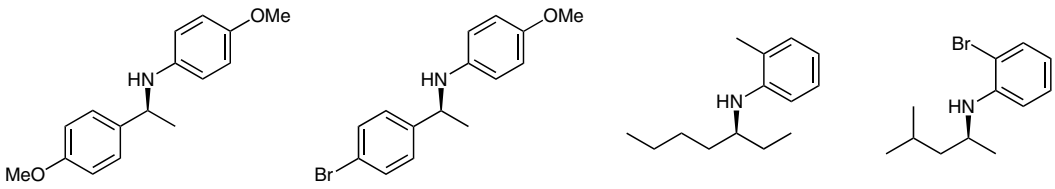
Brønsted acid

cooperative catalysis

Enantioselective Hydrogenation of Imines Using Cooperative Catalysis



Selected examples:



Significance: Optically active amines are common in many fine chemicals, agrochemicals, and pharmaceuticals. The authors report a cooperative metal-organo catalytic system utilizing a chiral Brønsted acid and an achiral iridium catalyst (see below for a Review on transfer hydrogenation).

Review: C. Zheng, S.-L. You *Chem. Soc. Rev.* **2012**, *41*, 2498–2518.

Comment: The authors have reported the cooperative use of a chiral iridium catalyst with a chiral phosphoric acid in the asymmetric hydrogenation of acyclic imines with H_2 (*J. Am. Chem. Soc.* **2008**, *130*, 14450). Here, they report an achiral iridium catalyst with a chiral phosphoric acid in a similar reaction. Alkyl imines, which are known to be difficult substrates for asymmetric hydrogenation, were shown to be excellent substrates in this system, giving enantioselectivities up to 97%.

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