Enantioselective Hydrogenation of Imines Using Cooperative Catalysis

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


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 H₂ (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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