

Publication

Asymmetric hydrogenation of α,β -unsaturated nitriles with base-activated iridium N,P ligand complexes**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 2815369**Author(s)** Müller, Marc-André; Pfaltz, Andreas**Author(s) at UniBasel** [Pfaltz, Andreas](#) ;**Year** 2014**Title** Asymmetric hydrogenation of α,β -unsaturated nitriles with base-activated iridium N,P ligand complexes**Journal** Angewandte Chemie International Edition**Volume** 53**Number** 33**Pages / Article-Number** 8668-8671**Keywords** asymmetric catalysis, hydrogenation, iridium, N,P ligands, nitriles

Although many chiral catalysts are known that allow highly enantioselective hydrogenation of a wide range of olefins, no suitable catalysts for the asymmetric hydrogenation of α,β -unsaturated nitriles have been reported so far. We have found that Ir N,P ligand complexes, which under normal conditions do not show any reactivity towards α,β -unsaturated nitriles, become highly active catalysts upon addition of N,N-diisopropylethylamine. The base-activated catalysts enable conjugate reduction of α,β -unsaturated nitriles with H₂ at low catalyst loadings, affording the corresponding saturated nitriles with high conversion and excellent enantioselectivity. In contrast, alkenes lacking a conjugated cyano group do not react under these conditions, making it possible to selectively reduce the conjugated C=C bond of an α,β -unsaturated nitrile, while leaving other types of C=C bonds in the molecule intact.

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