Catalytic asymmetric conjugate reduction with ethanol: A more reactive system Pd(II)–iPr-DUPHOS complex with molecular sieves 4A

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Abstract

We describe herein the catalytic asymmetric conjugate reduction of α,β-unsaturated carbonyl compounds using a novel cationic Pd–^{i}Pr-DUPHOS complex. In this reaction, EtOH worked well as a solvent and a reducing agent, and the reaction was completed within several hours in most cases to afford the reduced compounds almost quantitatively with modest to good enantioselectivity (up to 72% ee). It was found that the Pd–^{i}Pr-DUPHOS complex was more reactive than the previously reported Pd–BINAP complex when molecular sieves 4A was added as an additive. Based on an X-ray structural analysis of [Pd{(*S*,*S*)-^{i}Pr-duphos}](OTf)$_2$ complex, a working hypothesis of the reaction mechanism is also described.

Involved units

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Details

Identifier

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