Asymmetric Michael and Aldol Reactions with a Supported Chiral Diamine

Significance: A magnetic nanoparticle supported chiral aminocyclohexane 1 was prepared according to eq. 1. Asymmetric Michael and aldol reactions were carried out in the presence of 1 and DMAP in water at room temperature (eqs. 2 and 3, respectively) to give the corresponding adducts in ≤94% yield and ≤100% ee.

Comment: The organocatalyst 1 was characterized by FT-IR, XRPD, TEM, VSM, TG, and elemental analyses. In the reaction of nitrostyrene with isobutyraldehyde, the catalyst was magnetically recovered and reused four times without significant loss of its catalytic performance (fourth reuse: 83% yield, 95% ee).