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).

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**Selected examples:**

1. **Michael reaction**

   - ArNO₂ + H₂O, r.t., 3–6 h
   - 11 examples, 81–94% yield, 95–100% ee

   - **Selected examples:**
     - 87% yield, 97% ee
     - 91% yield, 99% ee
     - 84% yield, 96% ee
     - 86% yield, 99% ee

2. **Aldol reaction**

   - H₂O, r.t., 4–8 h
   - 7 examples, 80–93% yield, 94:6–99:1 ant/syn selectivity, 92–100% ee

   - **Selected examples:**
     - 85% yield anti/syn selectivity 94% ee
     - 89% yield anti/syn selectivity 100% ee
     - 81% yield anti/syn selectivity 92% ee
     - 80% yield anti/syn selectivity 95% ee