

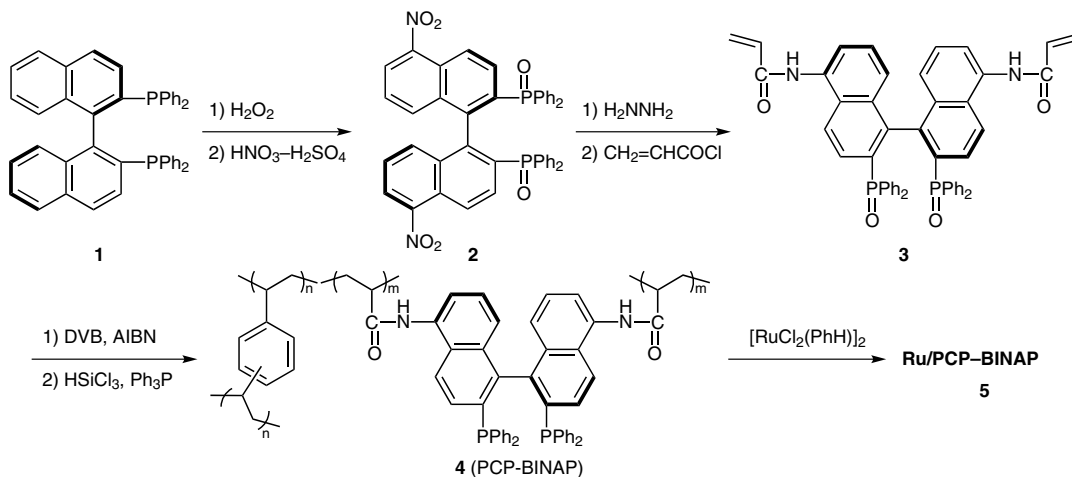
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Mesoporous Cross-Linked Polymer Copolymerized with Chiral BINAP Ligand Coordinated to a Ruthenium Species as an Efficient Heterogeneous Catalyst for Asymmetric Hydrogenation

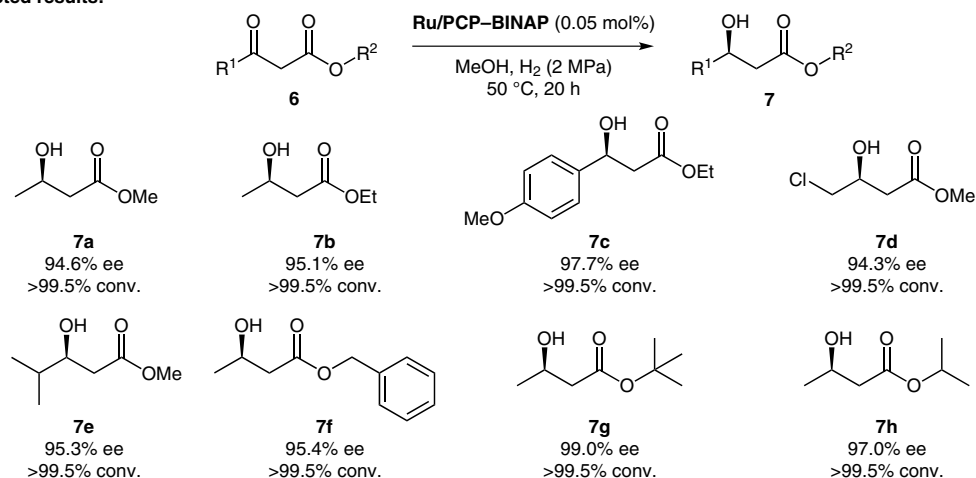
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Asymmetric Hydrogenation Using Polymer-Supported BINAP

Preparation of chiral Ru/PCP–BINAP 5:



Selected results:



Significance: A polymeric BINAP–ruthenium complex (Ru/PCP-BINAP) was prepared by treatment of $[\text{RuCl}_2(\text{PhH})_2]$ with the mesoporous cross-linked polymeric (*R*)-BINAP ligand **4**. Ru/PCP-BINAP catalyzed the asymmetric hydrogenation of β -keto esters under hydrogen (2 MPa) to give the corresponding β -hydroxy esters **7a–h** in >99.5% conversion with 94.3–99.0% ee.

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Comment: Ru/PCP-BINAP was readily recovered and reused six times without significant loss of its catalytic ability (1st reuse: >99.5% conversion, 94.3% ee, 6th reuse: >99.5% conversion, 95.3% ee).