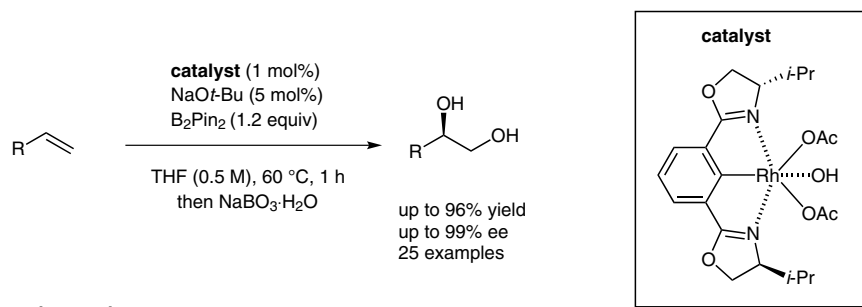


K. TORIBATAKE, H. NISHIYAMA* (NAGOYA UNIVERSITY, JAPAN)

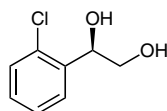
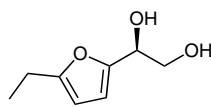
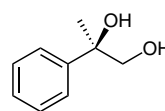
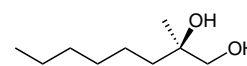
Asymmetric Diboration of Terminal Alkenes with a Rhodium Catalyst and Subsequent Oxidation: Enantioselective Synthesis of Optically Active 1,2-Diols

Angew. Chem. Int. Ed. **2013**, 52, 11011–11015.

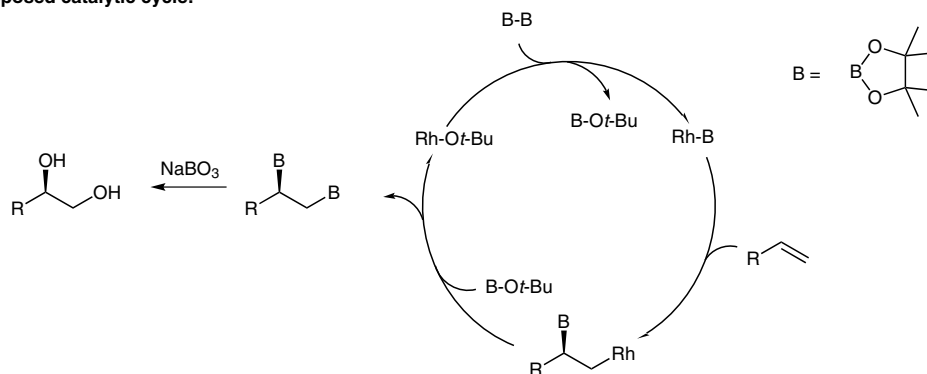
Rhodium-Catalyzed Enantioselective Synthesis of 1,2-Diols



Selected examples:

96% yield
99% ee71% yield
95% ee71% yield
76% ee69% yield
93% ee

Proposed catalytic cycle:



Significance: Chiral diols are useful synthetic motifs in organic synthesis. Common methods for their synthesis include dihydroxylation, hydrogenation of hydroxyketones, and hydrolysis of epoxides. The authors report an enantioselective 1,2-diboration of alkenes leading to optically active diols after oxidation.

Comment: Morken showed a similar diboration of terminal alkenes with a platinum catalyst with enantioselectivities up to 94% (*J. Am. Chem. Soc.* **2009**, 131, 13210). The authors present a rhodium-catalyzed diboration–oxidation of terminal alkenes providing enantioselectivities up to 99%. However, disubstituted alkenes proved to be more difficult. 1-Methylstyrene gave the diol with a moderate 76% ee, whereas β -methylstyrene, 1,2-dihydronaphthalene, and *trans*-stilbene did not react.

SYNFACTS Contributors: Mark Lautens, Zafar Qureshi
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