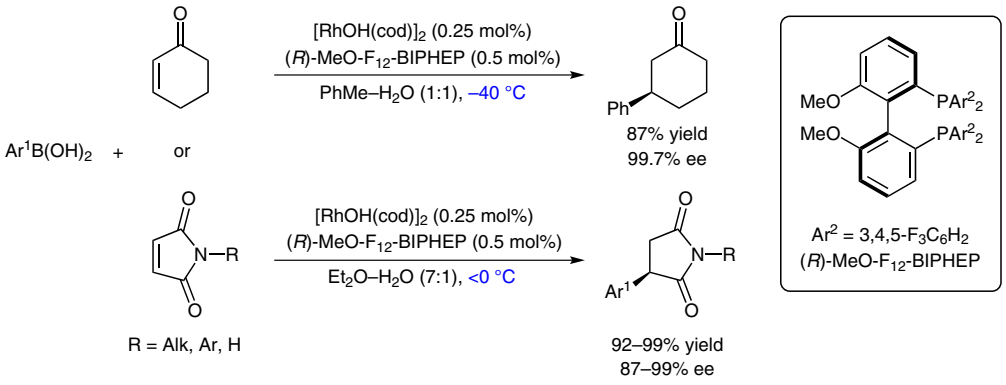
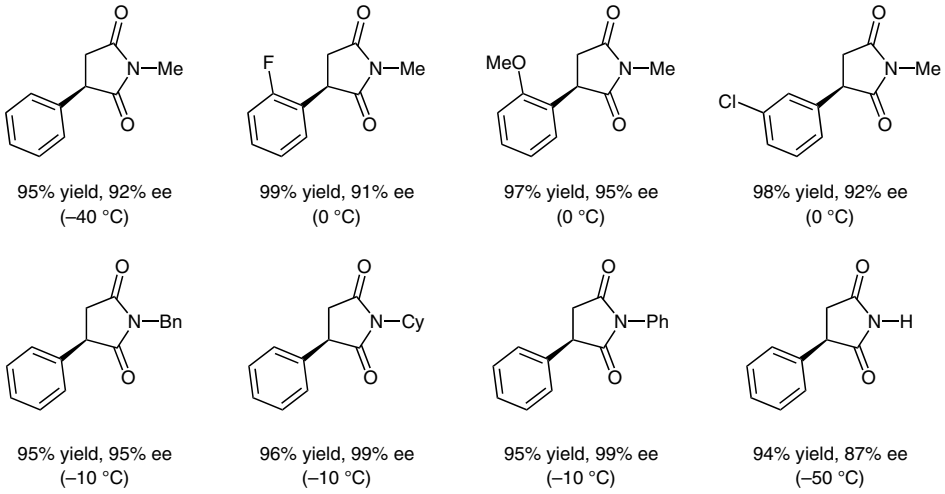
T. KORENAGA,* A. KO, K. SHIMADA (IWATE UNIVERSITY, MORIOKA, JAPAN)
Low-Temperature Rh-Catalyzed Asymmetric 1,4-Addition of Arylboronic Acids to α,β-Unsaturated Carbonyl Compounds
J. Org. Chem. **2013**, *78*, 9975–9980.

Enantioselective Low-Temperature 1,4-Addition of Arylboronic Acids



Selected examples:



Significance: Although various chiral rhodium catalysts have been developed, the rhodium-catalyzed asymmetric conjugate addition of arylboronic acids to α,β-unsaturated carbonyl compounds below 0 °C has not been achieved. This paper describes the rhodium-catalyzed enantioselective 1,4-addition of arylboronic acids at low temperature. The use of the highly electron-poor (*R*)-MeO-F_{12}-BIPHEP ligand can retain the activity of the rhodium catalyst, which can serve to improve enantioselectivities.

Comment: A variety of N-substituted maleimides are applicable to this method, affording the corresponding chiral succinimides in excellent yields and enantioselectivities. Notably, the enantioselective 1,4-addition to *N*-H-maleimide, which has been reported as an inactive substrate for rhodium-catalyzed asymmetric 1,4-addition, is also successful. When the reaction is performed at –50 °C, the enantioselectivity is improved to up to 87% ee.

SYNFACTS Contributors: Hisashi Yamamoto, Yusuke Ano
Synfacts 2014, 10(1), 0049 Published online: 13.12.2013
DOI: 10.1055/s-0033-1340439; **Reg-No.:** H16013SF

Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

Key words

rhodium

asymmetric 1,4-addition

arylboronic acids

α,β-unsaturated carbonyls

low-temperature addition