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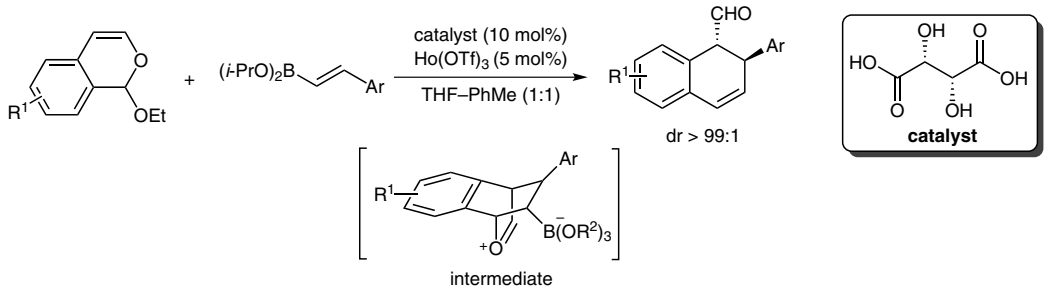
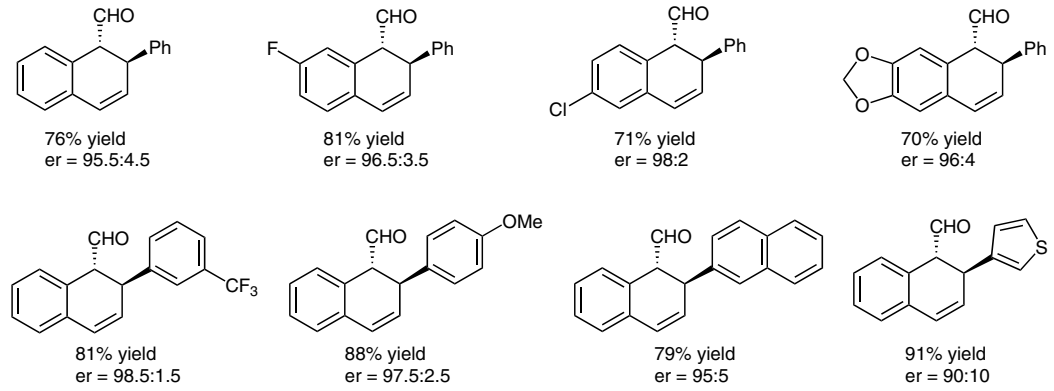
Enantioselective Synthesis of 1,2-Dihydronaphthalene-1-carbaldehydes by Addition of Boronates to Isochromene Acetals Catalyzed by Tartaric Acid
J. Am. Chem. Soc. **2015**, *137*, 3233–3236.

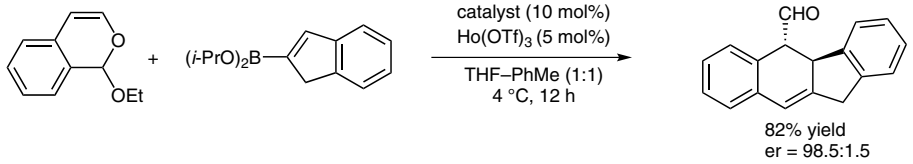
Asymmetric [4+2] Cycloaddition of Isochromene Acetals with Boronates



Selected examples:



The reaction of α-substituted vinylboronate:



Significance: The authors present the tartaric acid catalyzed asymmetric [4+2] cycloaddition of isochromene acetals with vinylboronates. A series of 1,2-dihydronaphthalene-1-carbaldehydes were prepared with excellent yields (up to 91%), diastereo- (dr up to >99:1), and enantioselectivities (er up to 98.5:1.5).

Comment: This method provides a facile access to chiral dihydronaphthalene building blocks that can be used to make important natural products and biological active compounds. Tartaric acid in combination with $Ho(OTf)_3$ is highly effective for the reaction.

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Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

Key words

[4+2] cycloaddition

tartaric acid

holmium