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

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%), diastereoselectivity (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.