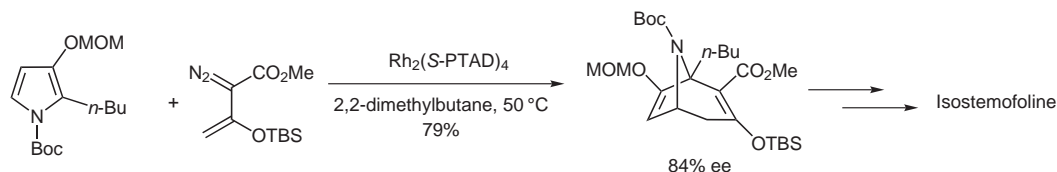
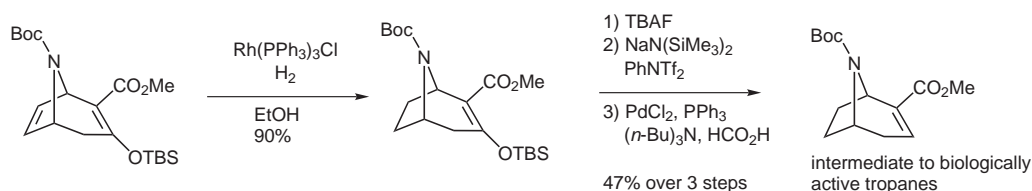
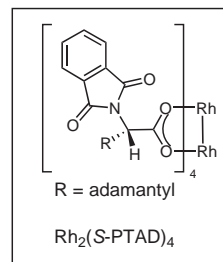
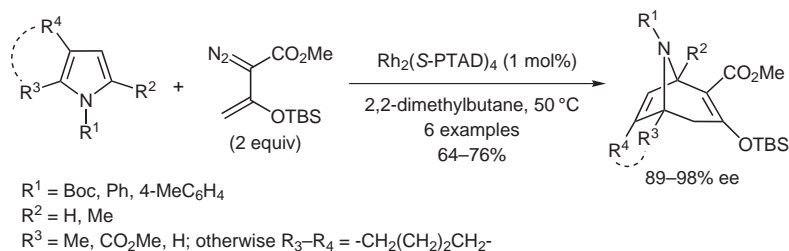


Asymmetric Rhodium-Catalyzed [4+3] Cycloaddition



Significance: A novel methodology for the asymmetric synthesis of tropanes (a popular natural product scaffold) is described using a rhodium-catalyzed [4+3] cycloaddition between pyrroles and a vinyl diazoacetate. The reaction tolerates a wide range of substituted pyrroles with good yields and excellent enantioselectivities. The products can be an intermediate or a precursor to an intermediate in several previously reported syntheses of biologically active tropanes.

Comment: The reaction proceeds by a tandem cyclopropanation–Cope rearrangement. The best catalyst for this reaction is $\text{Rh}_2(\text{S-PTAD})_4$, which limits the formation of some commonly observed side products. The reaction temperature is critical to achieve high conversions.