Ruthenium-Catalyzed Asymmetric [2+2] Cycloaddition of Ynamides with Enones

Significance: The chiral dicationic ruthenium complex catalyzes the asymmetric [2+2] cycloaddition of cyclic β-keto esters with ynamides. The reaction tolerates a wide range of substrates and generates an all-carbon quaternary stereogenic center in high yield and with high asymmetric induction.

Comment: Ynamides bearing an electron-deficient and an electron-donating group were found to be ideal substrates for this reaction due to the absence of an uncatalyzed background reaction at elevated temperatures.