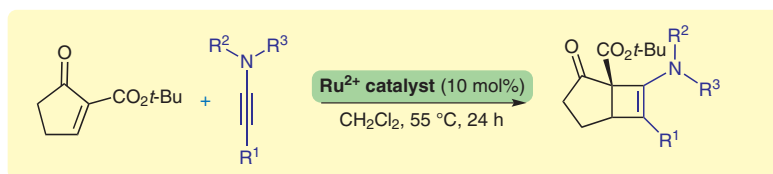
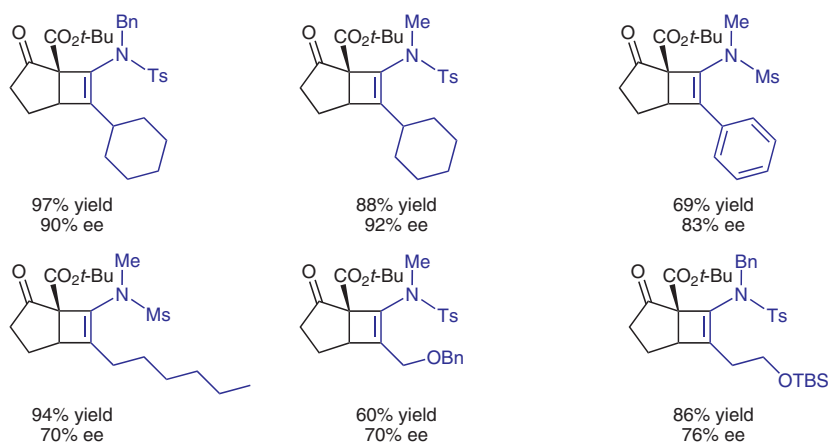


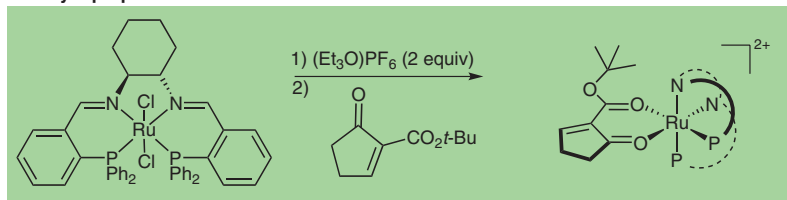
# Ruthenium-Catalyzed Asymmetric [2+2] Cycloaddition of Ynamides with Enones



## Selected examples:



## Catalyst preparation:



**Significance:** The chiral dicationic ruthenium complex catalyzes the asymmetric [2+2] cycloaddition of cyclic  $\beta$ -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.