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Asymmetric Hydrogenation of α,α′-Disubstituted Cycloketones through Dynamic Kinetic Resolution: An Efficient Construction of Chiral Diols with Three Contiguous Stereocenters
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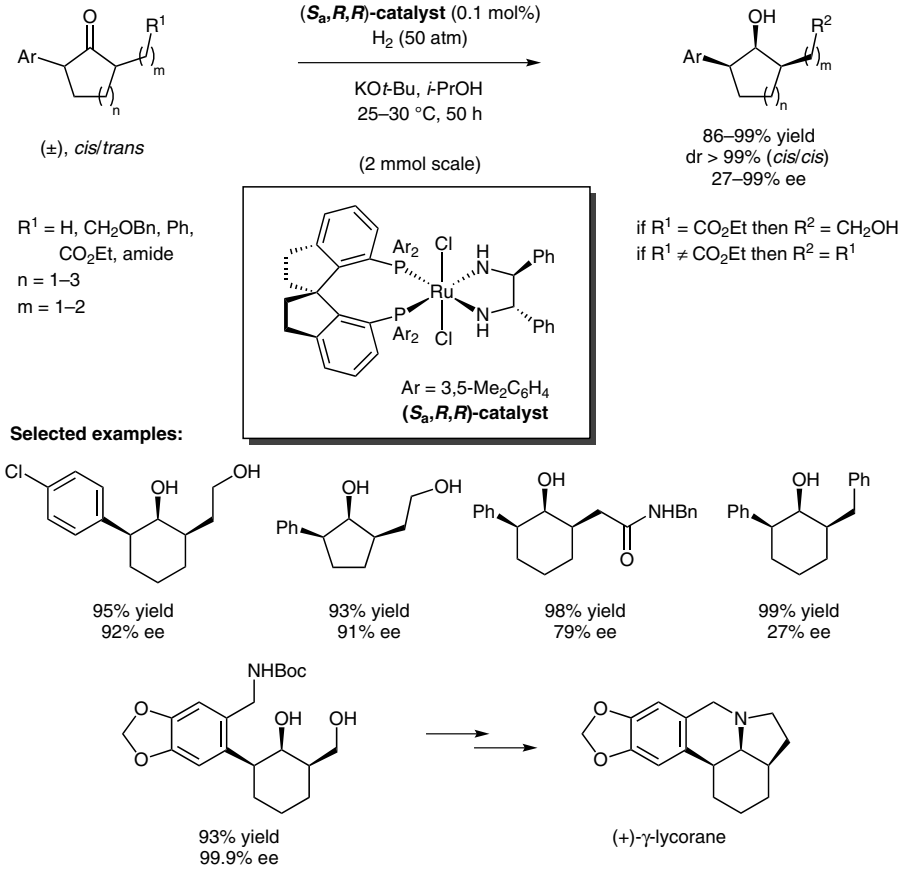
Ruthenium-Catalyzed Dynamic Kinetic Resolution of Cycloketones



Significance: A ruthenium-catalyzed hydrogenation of racemic, diastereomeric α′-aryl cycloketones is reported. The reaction is a dynamic kinetic resolution (DKR) and gives chiral diols with three contiguous stereocenters with high yield and enantioselectivity.

Comment: As the substrate consists of a mixture of four stereoisomers, exerting enantiocontrol in hydrogenation is a challenging feat. The DKR sets the α,α′-stereocenters and hydrogenates the ketone. When R^1 is an ester, lactonization occurs and the lactone is hydrogenated to the diol. The α′-aryl substituent is essential in the DKR. The synthetic utility of the DKR is demonstrated in the synthesis of (+)-γ-lycorane.

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Category

Metal-Catalyzed Asymmetric Synthesis and Stereoselective Reactions

Key words

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