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Catalytic Asymmetric β -Oxygen Elimination

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Zirconium-Catalyzed Asymmetric β -Oxygen Elimination for the Desymmetrization of *meso*-Ketene Acetals

Category

Metals in Synthesis

Key words

β -oxygen elimination

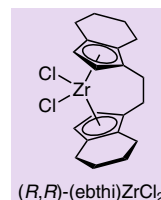
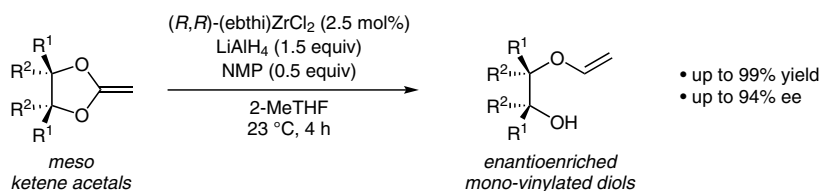
desymmetrization

diols

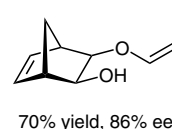
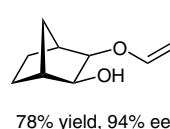
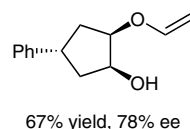
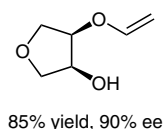
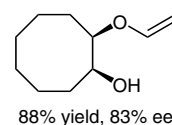
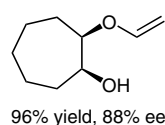
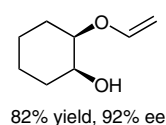
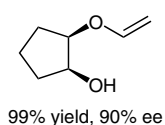
meso-compounds

zirconium catalysis

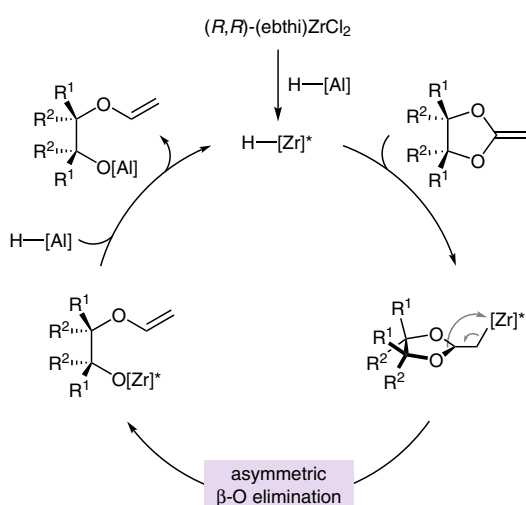
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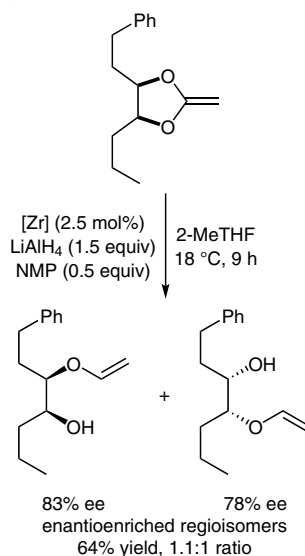
Selected examples:



Proposed mechanism:



Regiodivergent β -O elimination:



Significance: A zirconium-catalyzed strategy for the asymmetric ring-opening of *meso*-ketene acetals through β -oxygen elimination is disclosed. The enantioenriched mono-vinylated *cis*-1,2-diols are furnished in good yields and enantioselectivities.

Comment: A stereochemical analysis of the observed enantioselectivity was performed using DFT calculations. Key steps are both the initial non-symmetry breaking hydrozirconation of the alkene and the asymmetric β -oxygen elimination.

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