

Massachusetts Institute of Technology

Organic Chemistry 5.512

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Strategies for Stereocontrolled Synthesis

★ Thermodynamic Control

★ Kinetic Control

☆ Substrate Control

- * Steric Approach Control
- * Stereoelectronic Control
- * Internal Stereodirection

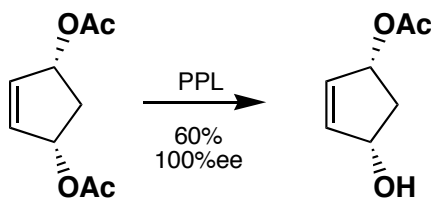
☆ Reagent Control

- * Achiral Substrate: enantiotopic face selectivity
- * Achiral Substrate: enantiotopic group selectivity
- * Chiral Substrate: Double Asymmetric Synthesis

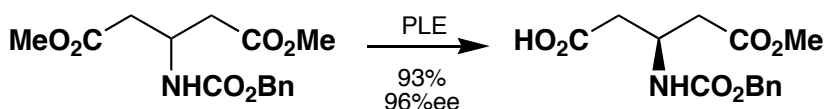
☆ Dynamic Kinetic Resolution

Reagent Control Strategies: Examples of Enantiotopic Group Selectivity

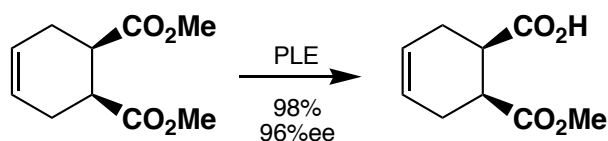
Lipase-Based Desymmetrization Reactions



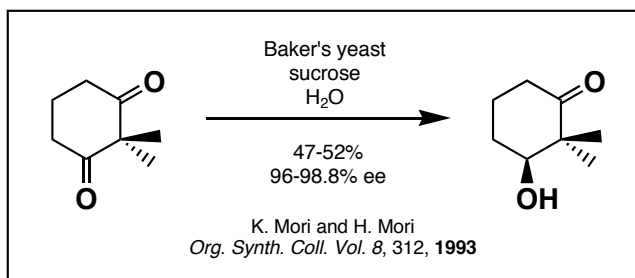
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Tetrahedron Lett. 32, 2409, 1991



M. Ohno
J. Am. Chem. Soc. 1981, 103, 2405



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Another example of biotransformations in asymmetric synthesis

Reagent Control Strategies: Enantiotopic Group Selectivity Coupled to Kinetic Resolution

