

Category

**Metal-Catalyzed
Asymmetric
Synthesis and
Stereoselective
Reactions**

Key Words

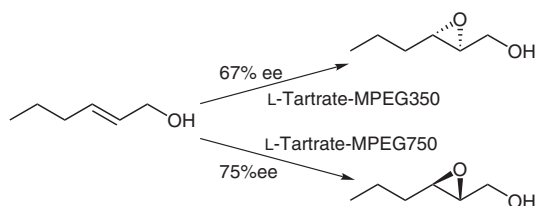
asymmetric
epoxidation
enantioversal
polymers

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Enantioversal in the Sharpless Asymmetric Epoxidation Reaction Controlled by the Molecular Weight of a Covalently Appended Achiral Polymer

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Molecular Weight Induced Enantioversal in Sharpless Asymmetric Epoxidation



Significance: The molecular weight of the poly(ethylene glycol) monomethyl ether (MPEG) can reverse the enantioselectivity for Sharpless epoxidation. A relatively narrow molecular weight range of 800 is sufficient to provide the enantioversal.

Comment: While the Sharpless asymmetric epoxidation is one of the most powerful synthetic tools, this finding stands to expand on this reaction. So far, various mechanistic investigations are reported for this important transformation. This paper provides completely new insights for the mechanism. The observed enantioversal was proposed to occur as a result of 2:1 titanium–ligand complex, as opposed to the 2:2 titanium–ligand complex of normal Sharpless asymmetric epoxidation.

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