

Massachusetts Institute of Technology

Organic Chemistry 5.512

April 13, 2005
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Unit 5

Stereocontrolled 1,2-Addition of Allylmetal Compounds to Carbonyl Groups

- ★ Introduction: Mechanism and Transition States
- ★ Substrate Control: Addition of Achiral Allylmetals to α -Chiral Aldehydes
- ★ Reagent Control: Addition of Chiral Allylmetals to Achiral Aldehydes
- ★ Reagent Control: Addition of Allylmetals to Achiral Aldehydes (w/ Chiral Lewis Acids)
- ★ Addition of Chiral Allylmetals to α -Chiral Aldehydes
- ★ Crotylmetal Additions: 3,4-Stereochemistry (Intrinsic Diastereoselection)
- ★ Crotylmetal Additions to α -Chiral Aldehydes

General References

"Allylation of Carbonyls: Methodology and Stereochemistry", Denmark, S. E.; Almstead, N. G. In *Modern Carbonyl Chemistry*; Otera, J., Ed.; Wiley-VCH, 2000, pp 299-402.

"Recent Applications of the Allylation Reaction to the Synthesis of Natural Products", Chemler, S. R.; Roush, W. R. In *Modern Carbonyl Chemistry*; Otera, J., Ed.; Wiley-VCH, 2000, pp 403-490.

"Catalytic Enantioselective Addition of Allylic Organometallic Reagents to Aldehydes and Ketones", Denmark, S. E.; Fu, J. *Chem. Rev.* **2003**, *103*, 2763-2793.