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Copper Reagents; 1.9 Asymmetric Silane and Stannane Copper-Promoted Reagents; 1.10 Conclusions; References; Chapter 2 Copper-Catalyzed Asymmetric Conjugate Addition; 2.1 Introduction; 2.2 Conjugate Addition; 2.2.1 The Nucleophile; 2.2.2 The Copper Salt; 2.2.3 The Ligand; 2.2.4 Scope of Michael Acceptors; 2.2.4.1 Enones; 2.2.4.2 Enals; 2.2.4.3 Nitroalkenes; 2.2.4.4 ,-Unsaturated Amide and Ester Derivatives; 2.2.4.5 Other Michael Acceptors
2.2.5 Formation of All-Carbon Quaternary Stereocenters2.3 Trapping of Enolates; References; Chapter 3 Copper-Catalyzed Asymmetric Conjugate Addition and Allylic Substitution of Organometallic Reagents to Extended Multiple-Bond Systems; 3.1 Introduction; 3.2 Copper-Catalyzed Asymmetric Conjugate Addition (ACA) to Polyconjugated Michael Acceptors; 3.2.1 Background; 3.2.2 1,6 Selectivity in ACA to Polyconjugated Systems; 3.2.3 1,4 Selectivity in ACA to Polyconjugated Systems; 3.3 Copper-Catalyzed Asymmetric Allylic Substitution on Extended Multiple-Bond Systems; 3.3.1 Background
3.3.2 Copper-Catalyzed Enantioselective Allylic Substitution on Extended Multiple-Bond Systems3.4 Conclusion; References; Chapter 4 Asymmetric Allylic Alkylation; 4.1 Introduction; 4.2 Nucleophiles in Enantioselective Process Development; 4.2.1 Grignard Nucleophiles; 4.2.2 Diorganozinc Nucleophiles; 4.2.3 Triorganoaluminium Nucleophiles; 4.2.4 Organoboranes Nucleophiles; 4.2.5 Organolithium Nucleophiles; 4.3 Functionalized Substrates; 4.3.1 Trisubstituted Substrates; 4.3.2 Ester Derivatives; 4.3.3 Heterofunctionalized Substrates; 4.3.4 Vinylic Boronates and Silanes
4.3.5 Substrates Bearing Two Leaving Groups (1,4 or 1,1')4.3.6 Enyne-Type Substrates; 4.4 Desymmetrization of meso-Allylic Substrates; 4.4.1 Polycyclic Hydrazines, Symmetric Allylic Epoxides, Oxabicyclic Alkenes; 4.4.2 Cyclic Allylic Bis(Diethyl phosphates); 4.4.3 Miscellaneous Desymmetrization; 4.5 Kinetic Resolution Processes; 4.5.1 Allylic Epoxides and Aziridines, Oxabicyclic Alkenes, Bicyclic Oxazines; 4.5.2 Stereodivergent Kinetic Resolution on Acyclic Allylic Halides; 4.6 Direct Enantioconvergent Transformation; 4.7 Conclusion and Perspectives; References
Chapter 5 Ring Opening of Epoxides and Related Systems

Sommario/riassunto

Copper-Catalyzed Asymmetric Synthesis reflects the increasing interest among the chemical synthetic community in the area of asymmetric copper-catalyzed reactions, and introduces readers to the latest, most significant developments in the field. The contents are organized according to reaction type and cover mechanistic and spectroscopic aspects as well as applications in the synthesis of natural products. A whole chapter is devoted to understanding how primary organometallics interact with copper to provide selective catalysts for allylic substitution and conjugate addition, b