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3.2.1.5 2,3-Disubstituted Quinolines; 3.2.1.6 Spiro-Tetrahydroquinolines; 3.2.2 Benzoxazines, Benzothiazines, and Benzoxazinones; 3.2.3 Benzodiazepines and Benzodiazepinones; 3.2.4 Pyridines; 3.2.5 3H-Indoles; 3.2.6 Quinoxalines and Quinoxalinones; 3.3 Organocatalytic Asymmetric Transfer Hydrogenation in Aqueous Solution; 3.4 Cascade Reactions; 3.4.1 Introduction; 3.4.2 In situ Generation of the Heteroarene; 3.4.3 Dearomatization of Pyridine/Asymmetric aza-Friedel-Crafts Alkylation Cascade 3.4.4 Combining Photochemistry and Brønsted Acid Catalysis 3.4.4.1 Quinolines; 3.4.4.2 Pyrylium ions; 3.5 Cooperative and Relay Catalysis: Combining Brønsted Acid- and Metal-Catalysis; 3.5.1 Introduction; 3.5.2 Improvements in Transfer Hydrogenation; 3.5.2.1 Regenerable Hydrogen Sources; 3.5.2.2 Asymmetric Relay Catalysis (ARC); 3.5.3 Cooperative Metal-Brønsted Acid Catalysis; 3.6 Summary and Conclusion; References; Chapter 4 Transition-Metal-Catalyzed Asymmetric Hydrogenation of Aromatics; 4.1 Introduction; 4.2 Catalytic Asymmetric Hydrogenation of Five-Membered Heteroarenes 4.2.1 Catalytic Asymmetric Hydrogenation of Azoles and Indoles 4.2.1.1 Rhodium-Catalyzed Asymmetric Hydrogenation of Indoles; 4.2.1.2 Ruthenium-Catalyzed Asymmetric Hydrogenation of Azoles; 4.2.1.3 Palladium-Catalyzed Asymmetric Hydrogenation of Azoles; 4.2.1.4 Iridium-Catalyzed Asymmetric Hydrogenation of Indoles; 4.2.2 Catalytic Asymmetric Hydrogenation of Oxygen-Containing Heteroarenes; 4.2.3 Catalytic Asymmetric Hydrogenation of Sulfur-Containing Heteroarenes; 4.3 Catalytic Asymmetric Hydrogenation of Six-Membered Heteroarenes; 4.3.1 Catalytic Asymmetric Hydrogenation of Azines 4.3.1.1 Iridium-Catalyzed Asymmetric Hydrogenation of Pyridines

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Sommario/riassunto

Annotation The first comprehensive account of the rapidly growing field of asymmetric dearomatization reactions with a focus on catalytic methods. It introduces the concept of dearomatization and describes recent progress in asymmetric reaction procedures with different catalyst systems, such as organocatalysts, transition metal catalysts, and enzymes. Chapters on dearomatizations of electron-deficient aromatic rings, dearomatization reactions via transition metal-catalyzed cross-couplings as well as dearomatization strategies in the synthesis of complex natural products are also included. Written by pioneers in the field, this is a highly valuable source of information not only for professional synthetic chemists in academia and industry but also for all those are interested in asymmetric methodologies and organic synthesis in general.

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