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3.2.1 Development of Highly Efficient Organocatalysts
3.2.2 Improving Enantioselectivity During Work-up; 3.2.3 Specific Application in the Synthesis of Non-natural Amino Acids; 3.2.4 Synthesis of α -Dialkylated Amino Acids; 3.2.5 Enantio- and Diastereoselective Processes - Synthesis of α -Amino Acid Derivatives with Two Stereogenic Centers; 3.2.6 Solid-phase Syntheses; 3.3 -Alkylation of Other Acyclic Substrates; 3.4 Fluorination, Chlorination, and Bromination Reactions; 3.4.1 Fluorination Reactions; 3.4.2 Chlorination and Bromination Reactions; References
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5.2.3 Proline-catalyzed Mannich Reaction: Process Development and Optimization; 5.2.4 Enantioselective Mannich Reaction using Silyl Ketene Acetals; 5.3 - Lactam Synthesis; 5.4 Sulfur Ylide-based Aziridination of Imines; 5.5 Hydrophosphonylation of Imines; References; 6 Nucleophilic Addition to C=O Double Bonds; 6.1 Hydrocyanation; 6.1.1 The Mechanism of the Reaction; 6.2 Aldol Reactions; 6.2.1 Intermolecular Aldol Reactions
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Sommario/riassunto

Asymmetric catalysis represents still one of the major challenges in modern organic chemistry. Besides the well-established asymmetric metal-complex-catalysed syntheses and biocatalysis, the use of "pure" organic catalysts turned out to be an additional efficient tool for the synthesis of chiral building blocks. In this handbook, the experienced authors from academia and industry provide the first overview of the important use of such metal-free organic catalysts in organic chemistry. With its comprehensive description of numerous reaction types, e.g., nucleophilic substitution and addition