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| Altri autori (Persone) | VosD. E. de (Dirk E.) VankelecomI. F. J (Ivo F. J.) JacobsPeter A |
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| Nota di contenuto | Chiral Catalvst Immobilization and Recycling; Contents; 1 Enantioselective Heterogeneous Catalysis: Academic and Industrial Challenges; 1.1 Introduction; 1.2 The Industrial Process in General and the Specific Prerequisites for Chiral Catalysts; 1. 2.1 Characteristics of the Manufacture of Enantiomerically Pure Products; 1.2.2 Process Development: Critical Factors for the Application of (Heterogeneous) Enantioselective Catalysts; 1. 2.3 Important Criteria for Enantioselective Catalysts; 1.3 The General Challenges; 1.3.1 For Academia; 1.3.2 For Industry 1.4 Chiral Heterogeneous Catalysts: State of the Art and Future Challenges1.4.1 Heterogeneous Catalysts Modified with a Chiral Auxiliary; 1.4.1.1 Metallic Catalysts on Chiral Supports; 1.4.1.2 Metallic Catalysts Modified with a Low Molecular Weight Chiral Auxiliary; 1.4.1.3 Metal Oxide Catalysts Modified with a Chiral Auxiliary having Low Molecular Weight; 1.4.2 Immobilized and Functionalized Homogeneous Catalysts; 1.4.2.1 Immobilized Homogeneous Catalysts; 1.4.2.2 |

1.

| | Alternative Methods Using Functionalized Ligands; 1.4.3 Catalysts with No Known Heterogeneous or Homogeneous Precedent 1.4.3.1 Insoluble Polypeptides and Gels1.4.3.2 Artificial Catalytic Antibodies; 1.5 Conclusions; References; 2 Catalyst Immobilization on Inorganic Supports; 2.1 Introduction; 2.2 General Considerations; 2.3 Supports; 2.4 Improved Activity of Heterogeneous Complexes; 2.5 Practical Examples; 2.5.1 Covalent Attachment; 2.5.2 Adsorption or Ion-Pair Formation; 2.5.3 Encapsutation; 2.5.4 Entrapment; 2.5.5 Supported Liquid Phase (SLP); 2.5.6 Modification of an Achiral Heterogeneous Catalyst with a Chiral Auxiliary; 2.5.7 Achiral Metal Catalysts on Chiral Supports; References 3 Organic Polymers as a Catalyst Recovery Vehicle3.1 General Introduction; 3.2 Alkene Hydrogenation; 3.3 Carbonyl and Imine Reduction; 3.4 Carbon-Carbon Bond Formation; 3.5 Carbonyl Alkylation; 3.6 Diels-Alder Reactions; 3.7 Enolate Chemistry; 3.8 Strecker Chemistry; 3.9 Asymmetric Dihydroxylation; 3.10 Epoxidation and Epoxide Ring Opening; 3.11 Acylation Catalysts; 3.12 Conclusion; References; 4 Liquid Biphasic Enantioselective Catalysis; 4.1 Introduction; 4.2 Hydrogenation; 4.3 Hydroformylation; 4.4 Oxidation; 4.5 Lewis Acid-Catalyzed Reactions; 4.6 Enzymatic Reactions; 4.7 Summary References5 Immobilized Enzymes in Enantioselective Organic Synthesis; 5.1 Introduction; 5.2.1 Methods of Immobilization; 5.2.1.1 Enzymes; 5.2.1.2 Carriers; 5.2.1.3 Binding Enzymes to Carriers; 5.2.1.4 Cross-Linked Enzyme Crystals; 5.2.2 Activity Assay; 5.2.3 Activity Balance; 5.2.4 Cost of Immobilization; 5.3 Operation; 5.3.1 Reactors; 5.3.2 Operational Stability; 5.4 Summary; References; 6 Enantioselective Hydrogenation Catalyzed by Platinum Group Metals Modified by Natural Alkaloids; 6.1 Historical Perspective 6.2 Enantioselective Hydrogenation of Activated Ketones over Platinum |
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| Sommario/riassunto | Homogeneous asymmetric catalysis offers reliable results and the possibility to 'tune' the catalysis on a rational basis. A pitfall, however, is that the separation of the catalyst from the starting material and products is difficult and often results in the loss of the catalytic material.Immobilization offers a potential solution for the user of enantioselective catalysts in industrial processes and laboratories. Heterogeneous catalysis allows continuous operations, recycling of the catalyst, and an easy separation of the reaction products, reducing both waste and costs.Chemis |