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Industrial Chemistry; 1.3.3 Safety and Sustainability of Chemicals; 1.4 International Chemicals Policy and Sustainability; 1.5 Sustainable Chemistry and Inherently Safer Design; 1.6 A Vision and Roadmap for Sustainability Through Chemistry; 1.6.1 Bio-Based Economy; 1.6.2 Energy; 1.6.3 Healthcare
1.6.4 Information and Communication Technologies1.6.5 Nanotechnology; 1.6.6 Sustainable Quality of Life; 1.6.7 Sustainable Product and Process Design; 1.6.8 Transport; 1.6.9 Risk Assessment and Management Strategies; 1.7 Conclusions; References; 2 Methods and Tools of Sustainable Industrial Chemistry: Catalysis; 2.1 Introduction; 2.2 Catalysis as Enabling Factor of Sustainable Chemical Production; 2.3 Homogeneous Catalysis and the Role of Multiphase Operations; 2.3.1 Multiphase Operations: General Aspects; 2.3.2 Aqueous Biphase Operations; 2.3.3 Organic Biphase Operations
2.3.4 Catalysts on Soluble Supports2.3.5 Fluorous Liquids; 2.3.6 Ionic Liquids; 2.3.7 Supercritical Solvents; 2.3.8 Supported Liquid Films; 2.3.9 Conclusions on Multiphase Homogeneous Catalysis for Sustainable Processes; 2.4 Bio- and Bioinspired-Catalysts; 2.4.1 Industrial Uses of Biocatalysis; 2.4.2 Advantages and Limits of Biocatalysis and Trends in Research; 2.4.3 Biocatalysis for the Pharmaceutical Industry; 2.4.4 Biocatalysis for Sustainable Chemical Production; 2.4.5 Biocatalysis in Novel Polymers from Bio-Resources; 2.4.6 Progresses in Biocatalysis; 2.4.7 Biomimetic Catalysis
2.5 Solid Acids and Bases2.5.1 Classes of Solid Acid/Base Catalysis; 2.5.2 Alkylation with Solid Acid Catalysts; 2.5.3 Synthesis of Cumene; 2.5.4 Friedel-Crafts Acylation; 2.5.5 Synthesis of Methylenedianiline; 2.5.6 Synthesis of Caprolactam; 2.5.7 Green Traffic Fuels; 2.5.8 Solid Base Catalysts; 2.5.8.1 Hydrotalcites; 2.5.8.2 Other Solid Bases; 2.6 Redox Catalysis; 2.6.1 Hydrogenation; 2.6.2 Asymmetric Hydrogenation; 2.6.3 Selective Oxidation; 2.6.3.1 Selective Oxidation: Liquid Phase; 2.6.3.2 Selective Oxidation: Vapor Phase
2.6.3.3 Selective Oxidation: Examples of Directions to Improve Sustainability

Sommario/riassunto

In recent years the need for sustainable process design and alternative reaction routes to reduce industry?s impact on the environment has gained vital importance. The book begins with a general overview of new trends in designing industrial chemical processes which are environmentally friendly and economically feasible. Specific examples written by experts from industry cover the possibilities of running industrial chemical processes in a sustainable manner and provide an up-to-date insight into the main concerns, e.g., the use of renewable raw materials, the use of alternative energy sources