1. Record Nr. UNINA9910147219703321

Autore	Sheldon Roger A
Titolo	Fine chemicals through heterogenous catalysis [[electronic resource] /] / Roger Arthur Sheldon, Hermann van Bekkum
Pubbl/distr/stampa	Weinheim ; ; Toronto, : Wiley-VCH, 2002, c2001
ISBN	1-281-76401-9 9786611764012 3-527-61296-3 3-527-61297-1
Descrizione fisica	1 online resource (639 p.)
Altri autori (Persone)	BekkumHerman van
Disciplina	541.395 660.2995
Soggetti	Heterogeneous catalysis Organic compounds - Synthesis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Fine Chemicals through Heterogeneous Catalysis; Contents; 1 Introduction; 1.1 What are Fine Chemicals?; 1.2 The Environmental Factor; 1.3 The Development of Organic Synthesis and Catalysis; 1.4 Why Heterogeneous Catalysis?; 1.5 Types of Catalysts and Reactions; 1.5.1 Solid-Acid Catalysis; 1.5.2 Solid-Base Catalysis; 1.5.3 Catalytic Hydrogenation; 1.5.4 Catalytic Oxidations; 1.5.5 Catalytic C-C Bond Formation; 1.6 Alternative Approaches; 1.7 Heterogeneous Catalysis in Multi-step Synthesis: Vanillin; 2 Basic Principles/General; 2.1 General Considerations and Types of Catalyst 2.1.1 Introduction2.1.2 Catalytically Active Surface Area; 2.1.3 Reactors Employed in the Fine-chemical Industry; 2.1.4 Slurry-phase Catalysts; 2.1.5 Fixed-bed Catalysts; 2.1.6 Integration of the Catalyst and the Reactor; 2.1.7 Solid Catalysts Employed in the Fine-chemical Industry; 2.1.8 Metal Catalysts; 2.1.9 Solid-Acid Catalysts; 2.2 Preparation of Solid Catalysts; 2.2.1 Demands on Solid Catalysts; 2.2.2 Preparation Procedures [2]; 2.2.3 Conclusions; 2.3 Characterization of Solid Catalysts; 2.3.1 Total Surface Area and Pore-size Distribution 2.3.2 Catalytically Active Surface Area Per Unit Weight of Catalyst2.3.3

Extent of Reduction of Metal Catalysts; 2.3.4 Solid-acid Catalysts; 2.3.5 Dispersion of Active Component(s) Over the Support; 2.3.6 Conclusions; 2.4 Reactors; 2.4.1 Introduction; 2.4.2 Three-phase Catalytic Reactions (G-L-S); 2.4.3 Characteristics of Three-phase Catalytic Reactors for Fine-chemicals Production; 2.4.3.1 Reactors with Moving Catalyst; 2.4.3.2 Reactors with a Fixed Bed of Catalyst; 2.4.3.3 Comparison-Reactor Choice; 2.4.4 Design Aspects of Stirred Tank Batch Reactor
2.4.5 Scale-up of Stirred-Tank Batch Reactors-Runaway Reactions3 Solid-acid Catalysts-General; 3.1 Acidic Clays; 3.1.1 Introduction; 3.1.2 Structure; 3.1.3 Main Properties and Catalytic Applications; 3.1.4 Pillared Interlayer Clays (PILC); 3.1.5 Conclusions; 3.2 Zeolites as Catalysts; 3.2.1 Introduction; 3.2.2 Acid Zeolites; 3.2.2.1 Framework Composition; 3.2.2.2 Extra-framework Composition; 3.2.3 Basicity in Zeolites; 3.2.3.1 Basic Zeolites-Framework Composition; 3.2.3.2 Basic Zeolites-Extra-framework Composition; 3.2.4 Redox Molecular Sieves; 3.2.4.1 Oxidation Sites in Framework Positions
3.2.4.2 Oxidation Sites in Extra-framework Positions3.2.5 Conclusions; 3.3 Sulfonated Polysiloxanes; 3.3.1 Motivation and Expected Advantages; 3.3.2 Synthetic Approaches; 3.3.2.1 Grafting of Silanes to Silica; 3.3.2.2 Copolycondensation and Sol-Gel Processing; 3.3.2.3 Sulfonation of Arylsiloxanes; 3.3.2.4 Oxidation of Sulfur-functionalized Siloxanes; 3.3.3 Characterization of the Polysiloxanes; 3.3.3.1 General; 3.3.3.2 Analytical Determination of Capacity; 3.3.3.3 NMR Spectroscopy; 3.3.3.4 Thermal Stability; 3.3.4 Applications and Reactions; 3.3.5 Summary; 3.4 Silica-occluded Heteropolyacids
3.4.1 Introduction

Sommario/riassunto

Nowadays, the chemical industry is under increased pressure to develop cleaner production processes and technologies. Much effort is devoted to the development of heterogeneous catalysts and their application in industrial-scale organic synthesis. This handbook concentrates on current attempts, focusing on fine chemical production.With contributions from an impressive array of international experts, this is essential reading for everyone interested in the advances in this field.