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Nota di contenuto	Microreactors in Organic Synthesis and Catalysis; Contents; Preface; List of Contributors; 1 Fabrication of Microreactors Made from Metals and Ceramics; 1.1 Manufacturing Techniques for Metals; 1.1.1 Etching; 1.1.2 Machining; 1.1.3 Generative Method: Selective Laser Melting (SLM); 1.1.4 Metal-Forming Techniques; 1.1.5 Assembling and Bonding of Metal Microstructures; 1.2 Ceramic Devices; 1.2.1 Joining and Sealing; References; 2 Fabrication and Assembling of Microreactors Made from Glass and Silicon; 2.1 How Microreactors are Constructed; 2.2 Glass as Material; 2.3 Silicon as Material 2.4 The Structuring of Glass and Silicon 2.5 Structuring by Means of Masked Etching in Microsystems Technology; 2.6 Etching Technologies; 2.6.1 Anisotropic (Crystallographic) Wet Chemical Etching of Silicon (KOH); 2.6.2 Isotropic Wet Chemical Etching of Silicon; 2.6.3 Anisotropic Dry Etching of Silicon; 2.6.4 Isotropic Wet Chemical Etching of Silicon Glass; 2.6.5 Photostructuring of Special Glass; 2.7 Chip

Removing Processing; 2.7.1 Drilling, Diamond Lapping, Ultrasonic Lapping; 2.7.2 Micropowder Blasting; 2.7.3 Summary; 2.8 Bonding Methods; 2.8.1 Anodic Bonding of Glass and Silicon 2.8.2 Silicon Direct Bonding (Silicon Fusion Bonding)2.8.3 Glass Fusion Bonding; 2.9 Establishing Fluid Contact; 2.10 Other Materials; References; 3 Properties and Use of Microreactors; 3.1 Introduction; 3.2 Physical Characteristics of Microreactors; 3.2.1 Geometries; 3.2.2 Constructional Materials and Their Properties; 3.3 Fluid Flow and Delivery Regimes; 3.3.1 Fluid Flow; 3.3.2 Fluid Delivery; 3.3.3 Mixing Mechanisms; 3.4 Multifunctional Integration; 3.5 Uses of Microreactors; 3.5.1 Overview; 3.5.2 Unstable Intermediates Fast and Exothermic Reactions; 3.5.3 Precision Particle Manufacture 3.5.4 Wider Industrial Context3.5.4.1 Sustainability Agenda; 3.5.4.2 Point-of-Demand Synthesis; References; 4 Organic Chemistry in Microreactors; 4.1 Homogeneous Reactions; 4.1.1 Acid-Promoted Reactions; 4.1.2 Base-Promoted Reactions; 4.1.3 Condensation Reactions; 4.1.4 Metal-Catalyzed Reactions; 4.1.5 Photochemical Reactions; 4.1.6 Electrochemical Reactions; 4.1.7 Miscellaneous; 4.1.7.1 Swern Oxidation; 4.1.7.2 Grignard Exchange Reaction; 4.1.7.3 Lithium-Halogen Exchange Reaction; 4.1.7.4 Phenyl Boronic Acid Synthesis; References; 4.2 Heterogeneous Reactions; 4.2.1 Introduction 4.2.2 Concepts in Flow Mode Synthesis4.2.3 Methods of Conducting Flow Chemistry; 4.2.3.1 On-Bead Synthesis; 4.2.3.2 Solution-Phase Synthesis; 4.2.3.3 Library Synthesis in Flow; 4.2.3.4 Heterocycle Synthesis; 4.2.4 Introduction to Monoliths; 4.2.5 Transition Metal Chemistry Under Flow Conditions; 4.2.5.1 Reduction; 4.2.5.2 Oxidation; 4.2.5.3 Cross-Coupling Reactions; 4.2.5.4 Olefin Metathesis; 4.2.6 Enantioselective Reactions; 4.2.6.1 Hydrolytic Kinetic Resolution; 4.2.6.2 Organometallic Additions; 4.2.6.3 Enantioselective Diels-Alder Reactions; 4.2.6.4 Ene Reactions; 4.2.6.5 Cyclopropanation 4.2.6.6 Asymmetric Conjugate Addition

Sommario/riassunto

This one-stop reference is the first book on this emerging and rapid developing field with a focus on synthesis and catalysis. As such, it covers all aspects from academia and industry in a clearly structured way. Leading experts provide the background information as an initial aid for newcomers to the field, while chapters on different reaction types and industrial applications make this an equally vital resource for specialists.
