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Nota di contenuto	Modern Biocatalysis; Contents; Preface; List of Contributors; 1: Fluorescence Assays for Biotransformations; 1.1 Introduction; 1.2 Alcohol Dehydrogenases (ADHs) and Aldolases; 1.2.1 Chiral Fluorogenic ADH Substrates; 1.2.2 Fluorogenic Aldolase Probes; 1.2.3 Transaldolases and Transketolases; 1.2.4 Enolase Probe; 1.3 Lipases and Esterases; 1.3.1 Assays on Solid Support; 1.3.2 The Clips-O Substrates with Periodate; 1.3.3 Esters of Fluorogenic Cyanohydrins and Hydroxyketones; 1.3.4 Fluorogenic Acyloxymethyl Ethers; 1.3.5 FRET-Lipase Probes; 1.4 Other Hydrolases; 1.4.1 Epoxide Hydrolases 1.4.2 Amidases and Proteases 1.4.3 Phosphatases; 1.5 Baeyer-Villigerases; 1.6 Conclusion; Acknowledgment; References; 2: Immobilization as a Tool for Improving Enzymes; 2.1 Introduction; 2.2 Adsorption/Electrostatic Interactions; 2.2.1 Van der Waals Interactions; 2.2.2 Hydrogen Bonds; 2.2.3 Ionic Interactions; 2.3 Encapsulation; 2.4 Covalent Binding/Cross-linking; 2.5 Conclusion; Acknowledgments; References; 3: Continuous-flow Microchannel Reactors with Surface-immobilized Biocatalysts; 3.1 Introduction

3.2 Biocatalytic Synthesis Using Microreaction Technology with Free and Immobilized Enzymes  
3.3 Novel Microfluidic Immobilized Enzyme Reactors; 3.3.1 Microreactor Design; 3.3.2 Enzyme Immobilization; 3.4 Enzymatic Hydrolysis of Lactose; 3.4.1 Catalytic Effectiveness of Immobilized CelB; 3.4.2 Continuous Conversion of Lactose; 3.5 Biocatalytic Process Intensification Using Microreaction Technology; 3.6 Conclusions and Outlook; Acknowledgements; References; 4: Activity and Stability of Proteases in Hydrophilic Solvents; 4.1 Introduction  
4.2 Activity and Selectivity of Proteases in Synthesis of Carbohydrate Fatty Acid Esters  
4.3 Enzyme Stability and Conformation; 4.4 Solvent Engineering; 4.5 Conclusion; References; 5: Importance of Enzyme Formulation for the Activity and Enantioselectivity of Lipases in Organic Solvents; 5.1 Introduction; 5.2 Lipase Formulations and their Activity and Enantioselectivity in Neat Organic Solvent; 5.3 Why do Additives Affect the Activity and Enantioselectivity of Lipases in Organic Solvent?; 5.4 Conclusions; References  
6: Direct Esterification with Dry Mycelia of Molds: a (Stereo)selective, Mild and Efficient Method for Obtaining Structurally Diverse Esters  
6.1 Mycelia and Biotransformations in Organic Media; 6.2 Screening and Microbiological Aspects; 6.3 Production of Acetates; 6.4 Stereoselective Esterifications of Racemic Alcohols; 6.5 Stereoselective Esterifications of Racemic Carboxylic Acids; 6.6 Partition Phenomena and Equilibrium of Esterification Reactions; 6.7 Conclusions; References; 7: Factors Affecting Enantioselectivity: Allosteric Effects; 7.1 How to Provide Enantiopure Compounds  
7.1.1 Kinetic Resolution of Racemic Mixtures Catalyzed by Enzymes

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Sommario/riassunto

This reference covers the wide and rapidly growing field of biocatalysis. It combines complementary expertise from such areas as microbiology, enzymology, molecular biology structural biology and organic chemistry, thus highlighting the interdisciplinary nature of the subject. With its special focus on progress and new developments towards environmentally beneficial reactions with high levels of selectivity for the production of key compound classes, this book will enlighten both chemists and biologists as to the advances and opportunities existing in enzyme catalysis.

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