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Autore	Cao Linqiu
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Nota di contenuto	Carrier-bound Immobilized Enzymes; Foreword; Contents; 1 Introduction: Immobilized Enzymes: Past, Present and Prospects; 1.1 Introduction; 1.2 The Past; 1.2.1 The Early Days (1916-1940s); 1.2.2 The Underdeveloped Phase (1950s); 1.2.3 The Developing Phase (1960s); 1.2.4 The Developed Phase (1970s); 1.2.5 The Post-developed Phase (1980s); 1.2.6 Rational Design of Immobilized Enzymes (1990s-date); 1.3 Immobilized Enzymes: Implications from the Past; 1.3.1 Methods of Immobilization; 1.3.2 Diversity versus Versatility; 1.3.3 Complimentary versus Alternative 1.3.4 Modification versus Immobilization 1.3.4.1 Enhanced Stability; 1.3.4.2 Enhanced Activity; 1.3.4.3 Improved Selectivity; 1.4 Prospective and Future Development; 1.4.1 The Room for Further Development; 1.4.2 An Integration Approach; 1.5 References; 2 Adsorption-based Immobilization; 2.1 Introduction; 2.2 Classification of Adsorption; 2.3 Principles Involved in Absorptive Enzyme Immobilization; 2.3.1

Monolayer Principle; 2.3.2 Stabilization Principle; 2.3.3 Enzyme Distribution; 2.4 Requirement of the Carriers; 2.4.1 Physical Requirements; 2.4.1.1 Pore-size and Available Surface 2.4.1.2 Internal Structure 2.4.1.3 Density of Binding Functionality; 2.4.1.4 Particle Size; 2.4.2 Chemical Nature of the Carriers; 2.4.2.1 Nature of Binding Functionality; 2.4.2.2 The Role of the Spacer; 2.4.2.3 The Nature of the Backbone; 2.5 Factors Which Dictate Enzyme Catalytic Performance; 2.5.1 Activity; 2.5.1.1 Diffusion-controlled Activity; 2.5.1.2 Conformation-controlled Activity; 2.5.1.3 Substrate-controlled Activity; 2.5.1.4 Loading-controlled Activity; 2.5.1.5 Medium-dependent Activity; 2.5.1.6 Microenvironment-dependent Activity; 2.5.1.7 Carrier Nature-dependent Activity 2.5.1.8 Enzyme Nature-dependent Activity 2.5.1.9 Additive-dependent Activity; 2.5.1.10 Hydrophilicity-dependent Activity; 2.5.1.11 Orientation-determined Activity; 2.5.1.12 Binding Nature-controlled Enzyme Activity; 2.5.1.13 Binding Density-controlled Enzyme Activity; 2.5.1.14 Reactor-dependent Activity; 2.5.1.15 Pore-size-dependent Activity; 2.5.1.16 Water-activity-dependent Activity; 2.5.2 Stability; 2.5.2.1 Conformation-controlled Stability; 2.5.2.2 Confinement-controlled Stability; 2.5.2.3 Enzyme Loading-dependent Stability; 2.5.2.4 Diffusion-controlled Stability 2.5.2.5 Cross-linking-dependent Stability 2.5.2.6 Carrier Nature-controlled Stability; 2.5.2.7 Aquaphilicity-controlled Stability; 2.5.2.8 Medium-controlled Stability; 2.5.2.9 Temperature-dependent Stability; 2.5.2.10 Microenvironment-controlled Stability; 2.5.2.11 Binding Nature-controlled Enzyme Stability; 2.5.2.12 Binding Density-controlled Enzyme Stability; 2.5.2.13 Additive-dependent Stability; 2.5.2.14 Enzyme Orientation-dependent Stability; 2.5.2.15 Enzyme-dependent Stability; 2.5.3 Selectivity; 2.5.3.1 Conformation-controlled Selectivity; 2.5.3.2 Diffusion-controlled Selectivity 2.5.3.3 Binding Functionality-controlled Selectivity

Sommario/riassunto

The first systematic overview of this key technique since the early 1990s, this authoritative reference is the only handbook available to include all recent developments. The author draws on his wide-ranging experience in both academia and industry to systematically cover all types of enzyme immobilization methods, such as adsorption-based and covalent immobilization, as well as enzyme entrapment and encapsulation. Throughout, a careful review of materials and techniques for the generation of functional immobilized enzymes benefits both developers and users of carrier-bound enzymes. A must
