

enzyme models and enzyme mimics. A major theme is the use of hydrophobic binding of substrates into cyclodextrins carrying catalytic groups to imitate the reversible formation of enzyme–substrate complexes. The creation and study of artificial transaminases and other enzyme mimics based on co-factors in the pyridoxal/pyridoxamine family are described in Chapter 2. Chapter 3 is focussed on the evolution of synthetic polymers with enzyme-like catalytic activities.

The information on the progress made in engineering catalytic antibodies has been reviewed in Chapter 4. Protein-based artificial enzymes, and artificial hydrolytic metalloenzymes have been covered in Chapters 5 and 6, respectively. These chapters provide information on modifying natural proteins to impart novel catalytic activity, and some of the fundamental roles of metal ions in hydrolysing esters, amides, nitriles and phosphate esters.

Molecular biology and biotechnology play essential roles in science and industry. The preparation of artificial restriction enzymes has been one of the most attractive themes for scientists, since they are essential for manipulating DNA in future biotechnology. This concept of artificial restriction enzymes as tool for future molecular biology and biotechnology is covered in the last chapter.

The topics in the book are well illustrated with suitable figures and recent references. In conclusion, this book is a big contribution to the emerging and fascinating area of enzyme technology and will serve as an excellent source of information for chemists, biochemists, biotechnologists and molecular biologists.

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A. Steinbuchel and S.K. Rhee, editors. Polysaccharides and Polyamides in the Food Industry vols. 1 and 2, Wiley/VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2005 (xx + 771 pp., £210.00, ISBN 3-527-31345-1)

Living organisms synthesize a wide variety of different polymers and some of the polymers are also produced from microorganisms through fermentation techniques. However, by far the largest amounts of biopolymers are still obtained from plant and animal sources or from algae. Biopolymers exhibit fascinating properties and are of increasing importance

for various applications. Basic and applied research has already revealed much knowledge about biopolymers for their applications in different areas. These volumes provide current state of knowledge on polysaccharides and polyamides with particular reference to the food Industry.

Polysaccharides comprise a distinct class of biopolymers, which exhibit a large variety of unique and in most cases complex chemical structures, different physiological functions and a wide range of potential applications particularly for foodstuff. For instance, a number of plant polysaccharides such as starch have been widely used in food for a very long time. More recently, other plant or microbial polysaccharides have also found use in the food industry. Volume I contains 13 chapters on different polysaccharides, which include alginates, bacterial cellulose, carrageenan, chitin and chitosans from animal sources, curdlan, dextran, exopolysaccharides of lactic acid bacteria, inulin, levan, pectins, pullulan, starch, and xanthan.

Organisms and in particular microorganisms are also capable of synthesizing other biopolymers consisting of amino acids, referred to as poly(amino acids) or polyamides. Polyamides are in contrast to proteins synthesized by soluble synthetases, which use free amino acids as substrates in ATP-dependent reactions. Many proteins and poly(amino acids) are of commercial interest because of their catalytic and physiological properties. Volume 2 is focussed on the polyamides and it includes collagens and gelatins, poly- γ -glutamic acid, ϵ -poly-L-lysine, sweet-tasting proteins, vicilin and legumin seed storage proteins. Enzymes play a vital role in various industrial processes. A separate chapter is also included on the technical application of enzymes in different industries such as detergent, starch, biofuel, textile, organic synthesis, fats and oil processing.

The polysaccharides and polyamides have been discussed in terms of their history, occurrence, physiological function, analysis, biosynthesis, molecular genetics, production, isolation, purification and applications. These volumes also provide the information on the patents on different polysaccharides and polyamides.

In conclusion, these volumes would be highly informative for all the individuals working in the area of polymers, biotechnology and food technology. These may not only support research and development but may also be suitable for teaching.

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