



## Book reviews

**Microbial Enzymers and Biotechnology – 2nd Edition.** Edited by William H. Fogarty and Catherine T. Kelly, Elsevier Applied Science, London, 1990. 472 pp. ISBN 1-85166-486-6. Price £75-00.

Enzyme-based technology is a factor of considerable economic and technological importance. Research in enzymes has now entered a new phase with the fusion of ideas from protein chemistry, molecular biophysics and molecular biology. The discovery of genetic engineering techniques via recombinant DNA not only offers the prospect of improving existing processes and products, but also enables us to develop new products which were not previously possible and facilitate the realization of other processes.

Most industrial enzymes are produced by micro-organisms, the largest group being peoteolytic (for use by the detergent, dairy and leather industries), followed by carbohydrases (used in baking, brewing and textile industries), leaving the lipases and highly specialized enzymes with the remainder.

Microbial enzymes have been exploited industrially for centuries without any scientific knowledge of their nature. It was not until the 1960s, when proteases were incorporated into washing powder, and later as other classes of enzymes began to find commercial uses, that their research and development became a major growth area in industrial microbiology.

The second edition of 'Microbial Enzymes and Biotechnology' shows how enzyme technology is being used at the moment and how it may develop in the future. The book provides information about the major group of commercially or potentially important enzymes. The range of topics covered includes the uses of enzymes in organic synthesis, in antibiotics, steroids and other conversions, microbial lipases, cellulases, glucose transforming enzymes, alkalophilic enzymes and microbiosensors and immunosensors. It is the aim of the book to bring together a substantial part of the application data to form a useful reference source.

This book is essential reading for any researchers

new to the subject or requiring access to the up-to-date studies undertaken in microbial enzymes.

**Zilda M.B. Figueiredo**  
**John F. Kennedy**

**Storage, Processing and Nutritional Quality of Fruits and Vegetables, 2nd Edition, Volumes 1 and 2.** Edited by D.K. Salunkhe, H.R. Bolin and N.R. Reddy, CRC Press Inc., Florida, USA, 1991. Volume 1: 323 pp. ISBN 0-8493-5623-7. Price £65-00. Volume 2: 195 pp. ISBN 0-8493-5624-5. Price £65-00.

The current generation of people have been, and continue to be, educated to be aware not only of current environmental issues, but also to be more conscious of their own health. Today's consumer requires information and knowledge on the nutritional content of the foods which are available, both in the natural and processed form, which can be incorporated into their 'healthy diets'. Fruit and vegetables are major sources of the necessary nutrients and form a significant part of a balanced diet. It is, therefore, essential that the nutritional quality of these foods is known and that the effects of storage and processing are fully understood. 'Storage, Processing and Nutritional Quality of Fruits and Vegetables' provides this information.

Divided into two volumes, Volume 1 discusses various aspects of fresh fruit and vegetables. Pre-harvest factors which determine both the quality and quantity of fruit and vegetables produced are discussed in the opening chapter of the first volume. This is followed by detailed discussion on the physiology, morphology, anatomy, chemical composition and nutritional quality of the fresh produce. The effect of post-harvest handling, storage and transportation on these parameters are reviewed. For long term storage, processing is required to minimise spoilage. The various types of processing, canning, freezing, etc., are

reviewed in Volume 2, together with information on their effect on nutritional quality.

Although, even in two volumes, it is only possible to give an overview of the current knowledge and technology, the contents of both books are well supplemented with up-to-date references for those requiring additional information.

These two volumes provide essential information for food technologists, engineers involved in development of food processing equipment, processors and shippers of fruit and vegetables, and to anybody interested in the nutritional content of the fresh and processed fruit and vegetables consumed as part of their diet.

**Linda L. Lloyd  
J.F. Kennedy**

**Biomaterials: Novel Materials from Biological Sources.**

Edited by D. Byrom, MacMillan Press, Basingstoke, UK, 1991. viii + 365 pp. ISBN 0-333-51175-1. Price £50.00.

Biomaterials can be classified into two types: type 1, which can be defined as chemically derived polymeric materials utilized in a wide range of medical applications; and type 2, which may be described as polymeric materials produced by a direct biological process, e.g. fermentation, or manufactured by extraction from natural sources. This second type of biomaterial can be synthesised from renewable resources and is often biodegradable with a range of specific properties which cannot easily be reproduced in synthetic polymers. They are, therefore, of much commercial interest although manufacturing costs, compared with

synthetic products, are high, so limiting their application to specialized areas. It is this second category of biopolymers which are commercially important, or of commercial potential, which are discussed in 'Biomaterials: Novel Materials from Biological Sources'.

The book is divided into eight chapters, the first seven of which review the structure, physical properties, manufacture, directly and/or indirectly, and applications of a particular type of biopolymer; silkworm and spider silks, collagen, polyhydroxyalkanoates, microbial polysaccharides, microbial cellulose, hyaluronic acid and alginates which are currently of commercial importance. The final chapter reviews briefly miscellaneous biomaterials including: poly- $\beta$ -hydroxybutyrate, starch based plastics, polylactide and polyglycolide, polyglutamic acid, mollusc glue bioadhesive, chitin and chitosan and skin substitutes which have commercial potential either for direct use or after chemical modification to enhance their properties.

'Biomaterials: Novel Materials from Biological Sources' is a well written, readable book which clearly demonstrates the requirement for a multidisciplinary approach to the further exploitation of biopolymers. It contains a wealth of information and over 1,500 references for those who wish to further expand their knowledge in this field. It should be of value to both commercial and non-commercial organizations working in the field of biomaterial development or production, as it covers both scientific and commercial aspects of the subject.

**Linda L. Lloyd  
John F. Kennedy**