

Book Reviews

Food Biotechnology—Vol. 2. Edited by R. D. King & P. S. T. Cheetham. Elsevier Applied Science Publishers, London, 1988. ISBN 1-85166-218-9. x + 260 pp. Price: £39.00.

The objective of these volumes is stated to be the clear description of the concepts, techniques and applications of biotechnology to food, with the emphasis of Volume 2 being particularly on applications. The editors hoped that the books would be a valuable source of information and act as reference books for academic and industrial scientists and technologists. These are obviously worthy objectives, so the question must be the extent to which they are achieved.

The vast majority of technical and scientific books published nowadays are edited compilations consisting of a number of chapters each contributed by a different author. While editors can do a lot to ensure a general uniformity of layout and presentation, there are inevitably always differences in style and content. With the latter the most important aspects are the level at which the topics are presented, the degree of previous knowledge assumed and the thoroughness with which the topics are covered; this includes the breadth of field covered, the time period covered and how up-to-date it is as well as the degree of comprehensiveness. In a series of review chapters, as presented here, it is also most helpful if authors, who are chosen as experts in their particular subjects, can introduce a certain amount of comment, observations and even criticism of published papers and findings as a guide to the reader. The extent to which all this is done naturally varies from one author to the next, so it is not surprising to find in this book chapters of very widely differing quality.

The first chapter on bioaffinity methods of analysis by the eminent Mattiasson is an unfortunate start to the book, as it is frankly disappointing. It is short and, perhaps because it attempts to cover too large a topic area, the net result is that it is somewhat superficial. This is the more regrettable because there is no doubt that, in the future, biosensors of various different types are likely to be crucial to the control and analysis of many biotechnological processes and applications. The second chapter on economic and commercial factors influencing the role of biotechnology in the food industry is an excellent and realistic resumé of the current situation and provides useful pointers to possible areas of development for the future. To students and scientists at the bench it is all too easy to be carried away on a wave of enthusiasm for what the biotechnological approach can do without adequate regard for likely costs and commercial viability, which is after all the meaning of technology in the word biotechnology. It is good to see a realistic commercial appraisal given prominence in this book. Gatfield's chapter on enzymic generation of flavour and aroma components follows and is a reprint of a chapter previously published elsewhere. I must confess to being against this practice in principle, but, having said that, it seems to be an adequate contribution and is obviously appropriate to the subject area. At only just over twenty pages to cover a very complex and extensive topic, however, it cannot be said to be very detailed, but within these limits it is a good effort and very readable. Immobilised plant cells is the subject of Chapter 4 and, being a rather longer chapter on perhaps a more closely defined subject, the coverage is more comprehensive and up-to-date. It begins by explaining basic concepts and methods commonly employed and then goes on, in a well-balanced and useful chapter, to cover the more chemical engineering aspects of bioreactor design, operation, product recovery and applications. The next chapter entitled 'Recent developments in enzyme technology as applied to foods and food processing' is very wide-ranging. While inevitably there is some going over well-worn subjects, newer aspects are also covered. Unfortunately, the chapter does suffer somewhat from being too wide-ranging, even to the extent of discussing lipase-mediated fat transformations and aspartame production, which are the subjects of the last two chapters. In spite of this, however, there are many valuable little snippets of information in this generally stimulating contribution. Chapter 6 on biotechnology applied to fats and oils is again extremely wide-ranging, summarising current technology and covering the biosynthesis of fatty acids, alterations in lipid composition by plant breeding, animal fat composition and dietary influences, new sources of lipids (with considerable emphasis on microbial sources), biochemistry of lipid accumulation, biomodification and biotransformation, emulsifiers and surfactants, plant cell culture and enzyme technology. At times it reads a

little like a shopping list, but with 219 references it is certainly comprehensive and should be a useful source of information. The last chapter is in direct contrast, being confined to a single narrow topic, the synthesis of aspartame. It covers the three possible routes of synthesis by chemical methods, enzymic techniques and recombinant DNA technology and discusses their relative merits and problems in a scholarly and exemplary fashion.

In summary then, it is a generally useful and interesting book, very good in parts, less good in others. Within the selected topics covered, however, most of the chapters provide good and up-to-date reviews, which should be valuable background reading and useful sources of information to students and researchers interested in applying modern biotechnological methods to food-related work.

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Organic Colorants. A Handbook of Data of Selected Dyes for Electro-optical Applications. Physical Sciences Data 35. By M. Okawara. T. Kitao, T. Hirashima and M. Matsuoka. Elsevier, Amsterdam and New York, 1988. ISBN 0-444-98884-X. 504 pp. Price: US\$236.75/Dfl.450.00.

This book is Number 35 in a series which covers data on a wide variety of subjects in the physical sciences. This particular volume is divided into several sections, starting with some essential pages on the organisation of the book and abbreviations used for the solvents and journals referred to in the main body of the text. The next section gives a concise introduction to the 'Development of Special Dyes for Electro-optical Applications', including references to other texts in the field. As would be expected for a book of this type, the greatest part (383 pages) is devoted to a summary of selected properties of the dyes (2700 in total). The dyes are numbered and their names, structures, absorption data, physical properties, uses and references to the literature are all tabulated. This data is classified into ten sections according to chromophore, i.e. I: Spiro compounds (Ferrocene, Fluorenone, Fulgide, Imidazole, Phenazine, Phenothiazine); II: Polyene (Carotene, Maleic anhydride, Pyrazolone, Stilbene, Styryl, Perylene); III: Azo compounds (Dithizone, Formazan); IV: Quinone (Phthaloylacridone, Anthrone, Indanthrone, Pyrenedione, Violanthrone); V: Indigo (Indirubin, Oxindigo, Thioindigo); VI: Diphenylmethane and Triphenylmethane (Fluoran, Fluorescein, Rhodamine); VII: Polymethine (Cyanine, Pyridinium, Perylium, Quinolinium, Rhodanine); VIII: Acridine, Acridinone, Carbostyryl, Coumarin, Diphenylamine, Quinacridone, Quinophthalone, Phenoxazine, Phthaloperinone; IX: Porphine, Chlorophyll, Phthalocyanine;