

Book Reviews

***Polysaccharides structural diversity and functional versatility*; S. Dumitriu (Ed.); Marcel Dekker Inc., New York, USA, 1998, 1176 pages, ISBN 0-8247-0127-5, price \$250.00**

Polysaccharide macromolecules and complexes are present in all living organisms. They are fundamental to the biological processes which occur. Polysaccharides are also of significant industrial importance being utilised in, and components of, industrial processes and products. In order to understand the complex role of polysaccharides in living systems and, to be able to control and alter their physico-chemical characteristics for industrial applications, it is necessary to determine the chain composition and its conformation within any given environment. This is a formidable task given the complexity of many polysaccharides.

This book “Polysaccharides structural diversity and functional versatility” is an attempt to bring together and summarise the present knowledge relating to polysaccharide chemistry. Its 30 chapters are split into three main areas; progress in structural characterisation, ionic polysaccharides, and new applications of polysaccharides. The chapters dealing with structural characterisation do not form a comprehensive overview of the techniques required to elucidate the structure of a polysaccharide. They focus only on a limited number of techniques including X-ray diffraction and NMR spectroscopy. The application of computational methods to the prediction of polymer chain conformation and interactions is also included. The middle section contains information on specific polysaccharides including hyaluronic acid, pectin, agar, chitins, cyclodextrins, and hemicelluloses and includes information on their source, production and possible uses. The final group of chapters looks at potential commercial applications including biofilms, immobilisation and biosurfactants.

Although this is a large book, some 1140 pages and 4100 references, it does not provide a comprehensive overview of the field of polysaccharides, but rather, provides detailed information on selected areas within the topics covered. Given the ready accessibility of data bases many of the chapters have, what may be considered, an excessive number of references, in one case 468. The information in several of the chapters does not include reference to the current research and two have no references after 1993. Much of the information in this book is readily available

from the specialist texts which provide more complete information in the relevant subject areas but it would be suitable for inclusion in main libraries.

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PII: S0144-8617(98)00141-6

***Carbohydrates from *Trichoderma reesei* and other micro organisms*; Structures, Biochemistry, Genetics and Applications; M. Claeysens, W. Nerincks, K. Piens (Eds.); The Royal Society of Chemistry, Cambridge, 1998, xv + 351 pages, ISBN 0-85404-713-1 (£69.50)**

Trichoderma reesei was named in the honour of Elwyn Reese, who together with Mary Mandels, pioneered research in the US Army laboratory in Natick, and developed the first cellulase enhanced mutants of this microorganism in the late 1960s. The advantages of *Trichoderma reesei* as a source of cellulase were recognised for its complete system of enzymes capable to hydrolyse crystalline cellulose and for its high yield of extracellular protein.

Since World War II, research has focussed upon the development of hypercellulolytic and hyperhemicellulolytic systems or complexes from various microorganisms, active at extreme temperatures or pH. As a result of the energy crises, several programmes were set up in the seventies which led to new industrial applications of these enzymes, now produced in ton scales.

“Carbohydrases from *Trichoderma reesei* and other microorganisms” is the proceedings of the Tricel 97 meeting held in Ghent, Belgium, and is dedicated to Dr E.T. Reese and Prof. J.P. Aubert, two pioneers in cellulase research. It is organised in five sections which deal with aspects of: the biochemistry of glycanases; structure and function of carbohydrases; substrates and industrial applications; gene regulations and expression; and protein-linked glycosyl structures in lower eucaryotes.

This book provides an up date coverage of the subject and is a useful reference for researchers working in the field. It

will be of particular interest to biochemists, molecular biologists, X-ray crystallographers and industrialists.

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PII: S0144-8617(99)00036-3

***Functional Foods, the Consumer, the Products, and the Evidence*; M.J. Sadler, M. Saltmarsh (Eds.); The Royal Society of Chemistry, 1998, 215 pages, ISBN 0-85404-792-1**

Recently, government committees, the media, as well as the general public, have all showed interest and concern to diet and health. Consequently, the food industry have concentrated and researched, to develop products with positive nutritional benefits, to equilibrate with society's concerns. Food and diet are significantly fundamental to today's lifestyle and should be considered seriously.

Functional foods: the consumer, the products and the evidence, is the latest publication from The Royal Society of Chemistry. This scientifically sound publication provides a comprehensive, up to date and authoritative understanding of such areas as; evidence for the benefit of dietary fibre, fermented dairy products and fish oils, approaches to assessing the adequacy of scientific evidence, consumer health concerns, and the current regulatory position.

The text is aimed at a wide market; ranging from degree through to research level. It would also be found useful to those interested in nutrition and food development in general, as a reference text.

The text, where relevant, is aided by well presented diagrams, orthodox tables and references. The tables and diagrams within the text under review are presented in such a manner that they are easy to follow and therefore aid the understanding of the subject in hand.

Overall this book is well presented, a good length (having 215 pages), thorough and a very readable text. Over all it can be classed as a fine publication.

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PII: S0144-8617(99)00037-5

***Environmental Chemistry*, 3rd ed.; P. O'Neill (Ed.); Blackie academic and Professional Publications, London, 1998, ISBN 0 7514 04837 (£15.99)**

As knowledge of the earth's chemical environment has increased, there is still ever-increasing concern on the role of chemical elements in the synthesis and decomposition of natural materials, including the changes specifically brought about by human activities. Hence, capabilities of these activities to cause major disturbances of the natural environment. A prime example of these disruptions is the decline in stratospheric ozone concentrations. It is therefore important to understand the operation of such natural systems, and how human activities can modify these systems.

Environmental Chemistry is the latest edition from Blackie academic and Professional Publications, which gives a comprehensive, up-to-date (including new information, for example, on Uranium and nuclear energy), and authoritative understanding of certain fields of environmental chemistry, such as, the problems of nuclear waste; landfill chemistry; oil production; ozone depletion and the greenhouse effect, and hence, attempts to explain why a specific change occurs and why a particular pathway has been followed.

Presented with relevant and precise information, the book provides a brief introduction to environmental chemistry in a four part format which allows the grouping together of related environmental topics and the introduction of theoretical concepts.

Aiding the literature are useful references to key sources, as well as edifying tables, diagrams, equations, graphs and a clearly layed-out glossary. Each of these illustrations is well presented; relevant as well as scientifically accurate.

As this well-produced literature assumes only an elementary knowledge of chemistry, it is therefore focused for students studying environmental science at degree level.

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PII: S0144-8617(99)00038-7

***Concise Encyclopedia of Polymer Science and Engineering*; J.I. Kroschwitz (Ed.); John Wiley & Sons, Chichester, 1998, 1341 pages, ISBN 0-471-31856-6 £63.95**

There is a vast amount of information available on a