

from the study of grains at all stages of their production and utilization.

The editors bring together information about all areas of grain science, offering extensive articles that include bibliographies and lists of useful Web sites. One of the strengths of this book is the amount of effort put into its cross-referencing. This information is well organized making this set very easy to locate information as needed. The valuable information, authoritative answers to perplexing questions, and numerous black and white photos, illustrations, and charts are supplied for complementing a useful and clear introduction of grain science. This book is highly recommended for academic collections with agriculture, food science, and/or nutrition departments.

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S.W. Cui, editor. Food Carbohydrates: Chemistry, physical properties, and applications, CRC Press/Taylor and Francis Group, Boca Raton, FL, USA, 2005 (x + 418 pp., £92.00, ISBN 0-8493-1574-3)

Carbohydrates are one of the most important ingredients in foods and are essential for the maintenance of life and good health. These may occur naturally or added to food products to provide nutrients and to improve the overall quality of a food product. Food carbohydrates can be classified according to their chemical structure into three main groups, low molecular weight mono- and disaccharides, intermediate molecular weight oligosaccharides and high molecular weight polysaccharides. However, nutritionists divide food carbohydrates into two classes on the basis of their metabolism.

Food Carbohydrates: Chemistry, Physical Properties, and Applications opens with an introductory chapter on chemistry of food polysaccharides. The current methods used for the analysis of total carbohydrates, monosaccharides, oligosaccharides and dietary fibers in food products are described in the second chapter and structural analysis of polysaccharides is discussed in the subsequent chapter.

The functional properties of food polysaccharides are dependent on the structure, molecular weight and concentration of the polysaccharides present. The fourth chapter deals with the functional properties of food polysaccharides and associated characterisation methods. The basic concepts,

terminologies and characterisation methodologies used in studying the conformation of polysaccharides are covered in the fifth chapter.

Polysaccharide gums occur in nature as storage materials, cell wall components, exudates and extracellular substances from plants or microorganisms. The structure, functional properties and application of different polymer gums are covered in the sixth chapter. The seventh chapter is focussed on starch chemistry, granular and molecular structure, functionality and the role of starch in food. Starch modifications using various techniques, the functional properties of starches and their application in foods are discussed in the final chapter of the book.

The only criticisms of the book are that some of the polysaccharide structures are poorly presented, i.e. not drawn very well, and some could be described as inaccurate or even incorrect. Likewise, the use of Haworth structures and chair structures is not consistent throughout. Also some of the written descriptions of the linkage configurations between monosaccharide units are not correct, e.g. one should not write β -(1 \rightarrow 4) linkages, but e.g. (1 \rightarrow 4-linked β -D-glucopyranose units since the β refers to the configuration of the monosaccharide unit present, not the linkage. Similarly the description of an α - or β -anomeric form is only specific if the absolute configuration is co-named e.g. ' α -D-glucopyranose.' The naming of monosaccharide units is not consistent, since the absolute configuration is used sporadically. Sadly even the structure on the front cover has some poorly produced H's for hydrogen atoms.

In conclusion, this book is a useful reference book for all the persons working in the area of food carbohydrates.

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Robert Thomas, Practical guide to ICP-MS (2004, Marcel Dekker, INC, New York, USA) (xii + 324pp., £55.00, ISBN 0-8247-5319-4)

Inductively coupled plasma mass spectrometry has grown for over 20 years. Recently, even though numerous publications were available, no textbooks were being written specifically for beginners with a very limited knowledge of the technique. This book includes detailed knowledge of this technique, so it can be used as a reference book by both

analytical chemists and senior management, and also in training programs, classrooms and laboratories.

There are 21 chapters in this book. In the first six chapters, it just is an introduction of ICP-MS. It discusses the principle of the technique, sample preparation, plasma source and the interface region and ion focusing. The following four chapters focus on the heart of the system—Mass analyzers, which is the region of the ICP-MS that separates the ion according to their mass-to-charge ratio. There are four kinds of technology being described: quadrupole technology, double-focusing magnetic sector technology, time of flight technology and collision/reaction cell technology. These technologies are differentiated by the mass separation device, but they all have one common goal and that is to separate the ions of interest from all other nonanalyte, matrix, solvent, and argon-based ions.

From chapter 12 to chapter 17, it describes the detail of ICP-MS when it is being operated, and the routine maintenance issues associated with the technique. In the remaining chapters, it discusses the ways in which ICP-MS is applied in the real world and gives the selection criteria when evaluating commercial use. It also compares ICP-MS to other techniques in terms of detection capability dynamic range, interference, sample throughput, precision speed of analysis and running cost. So that it can enable the user evaluate the benefits of ICP-MS against other atomic spectroscopy instrumentation methods.

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C. Baillie, editor. Green composites: Polymer composites and the environment (2004, Woodhead Publishing, CRC Press, North America, USA) (xii + 308 pp., £115.00, ISBN: 1-85573-739-6)

Life cycle assessment is important at every stage of a product's life, from synthesis through to disposal, and a sustainable society needs environmentally safe materials and processing methods. In this way, life cycle assessment is defined as 'an objective process or activity by identifying energy and materials used and wastes released to the environment, and to evaluate the implements.'

Every day the production of chemical products, faster machines, bigger toys, etc. is higher without due consideration

of the effects on the environment or on people. This is a real irresponsibility laid to the charge of humans. Due to this consideration of the effects on the environment, a growing movement of scientists and engineers have realised that they need to take responsibility for the outcome of their work. Over the past 10 years, they decided to change the direction of their research and increase the number of researchers working in this area. After all this time, it has been considered convenient to reflect on the progress and purpose of the work to make sure that we are in fact doing what we say we would like to do.

Green composites: Polymer composites and the environment is based on green composites, which are defined as composites that are designed with the lowest environmental 'footprint' possible. Furthermore, the book is focused on the fibre-reinforced polymer composites currently in use, and is dedicated to minimising the environmental impact of polymer composite production.

First of all the book starts with the choice of materials that iterates with the design and function or the application (chapter 2), and the factors affecting the life cycle analysis (chapter 3). There are different possible fibres, which can be used as reinforcement, as well as potential polymer matrices. In this latter category thermoplastics may be considered as a source which may be recycled, or as a non virgin source: composites are a means of upgrading recycled polymers as well as thermosets which need to be re-used or biodegradable thermosets which degrade. Polymers derived from natural sources are also covered. Finally, the book looks at the re use, recovery and recycling of the composites that have been made.

Green composites: Polymer composites and the environment is an essential guide for agricultural crop producers, government agricultural departments, automotive companies, composites producers and materials scientist, who are dedicated to the practice and promotion of eco-friendly processes.

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E. Riande and R. Díaz-Calleja, Electrical Properties of Polymers, Marcel Dekker, Inc., New York, USA 2004, (xix + 630 pp., £111.00, ISBN 0-8247-5346-1).

The characteristic of polymers that have length and molecular scales larger than atomic size gives them unusual