

Food Flavours: Generation, Analysis and Process Influence. Developments in Food Science, Volume 37. Edited by G. Charalambous. Elsevier Science, Amsterdam, The Netherlands, 1995. 37A: vii + 1099 pp; 37B: v, 1001 + 2236 pp. Price US\$442.75.

This volume details the lectures and many of the feature presentations held at the 8th International Flavour Conference (6–8 July 1994). The underlying theme of the conference was 'Recent Developments in Food Science and Nutrition'. These volumes contain separate chapters for each of the papers presented, where major emphasis was placed on the effects of processing and food components upon the flavour of food and beverages.

The research shown in these volumes further confirms the tremendous importance of flavour chemistry in a wide variety of food and beverage products. With existing analytical and instrumentation being developed and improved, food scientists have greater ability to isolate, identify and quantitate food flavour compounds. These volumes are a testament to this progress.

This book aims to present the latest development in the broad field of Food Science and Nutrition. It achieves this through incorporation of the numerous papers, ranging from food applications of biopolymers—theory and practice, to the interactions between polysaccharides and aroma compounds. The size and diversity of the content of these volumes, with entries such as roasting of peanuts, gamma irradiation of packaging films, and factors affecting development of flavour in whisky, wines, fermented products, alcohol precursors, and model food systems, means there is insufficient space in this review to do the subject matter justice.

The varying text font types in these volumes create a lack of uniformity in the book. However, the editor has ensured a high quality of diagrams allowing unhindered comprehension. This is an excellent book, particularly suited to carbohydrate scientists, food scientists and those associated with the food industry in general.

Andrew D. Suett
John F. Kennedy

Spectroscopic Techniques for Food Analysis. By R.H. Wilson. VCH Verlagsgesellschaft mbH, Weinheim, Germany, 1994. 246 pp. Price DM 165.00. ISBN 1-56081-037-8.

There are many methods of analysis available to the food analyst including gas chromatography for volatile component analysis, liquid chromatography for the analysis of solutes in solution, electrophoresis for protein profiling and spectroscopy, which can assist in providing information on composition and structure of

foods. One of the primary classes of food which must be considered consists of the carbohydrates, monosaccharides, oligosaccharides, and polysaccharides as they play a major role in the functional and aesthetic qualities of foods. The spectroscopic techniques are some of the most important for the composition and structural analysis of carbohydrates.

Spectroscopic Techniques for Food Analysis details the different forms of spectroscopy which are applicable for the analysis of food components and total foods. The book is split into seven chapters, the first of which is an overview of the various spectroscopic methods and gives a good foundation for the other six chapters which detail individual spectroscopic techniques, near infra-red, mid-infra-red, nuclear magnetic resonance, analytical spectroscopy (for the determination of metals in foods), mass spectroscopy, and UV/visible. The focus for each of the techniques is on practical applications rather than theoretical detail. Mass spectrometry coupled to gas chromatography is discussed for the analysis of nature and linkage positions of the individual monosaccharides which constitute a polysaccharide, and there is an excellent summary on the use of nuclear magnetic resonance spectroscopy for the structural determination of the often complex polysaccharide component of foods.

The book is well written, although the index is not as comprehensive as it might be, and each chapter is well referenced. It is recommended not only for food analysts, but also for those requiring a general introduction to the potential of spectroscopy.

Linda L. Lloyd
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Monosaccharides: Their Chemistry and their Roles in Natural Products. By P.M. Collins and R.J. Ferrier. Wiley, Chichester, UK, 1995. vi + 574 pp. Price US\$30.35. ISBN 0-4719-5343-1.

Monosaccharide research is now practiced in several subject areas, having rapidly diversified and expanded as a branch of modern chemistry. It has now been incorporated into modern organic chemistry though its central significance lies in biology and the new science 'glycobiology'. With the general advancement and utilisation of organic chemistry knowledge, carbohydrate chemistry has long been accepted as a potent force in science. This has meant many 'Organic Chemists' jumping on the carbohydrate 'Band-Wagon'.

For those aware of the previous work of the authors, this is effectively the second edition; however, due to the advancement of this branch of chemistry, this edition has undergone major restructuring and expansion to accommodate the subject. Each chapter introduces the subject either by dealing with matters relating to molecular structure and conformation (Chapter 2), or

by describing the fundamental organic chemistry of monosaccharides (Chapters 3, 4 and 5). Recent progress in the use of monosaccharides as starting materials in the synthesis of biologically-important oligosaccharides and enantiomerically-pure non-carbohydrate products is covered in Chapters 6 and 7.

Finally, Chapter 8 deals with sugars found or related to natural products, the subject matter here focusing on compounds of biological importance and medicinal significance, thus serving as an introduction to glycobiology for non-biologists whilst providing biologists with chemical features of the compounds.

The text includes five appendices, adding a reference source angle to the book, including information on nomenclature, NMR, chemical shift data, polarimetry and systematic names of microbiological sugars.

The book is written in an easily comprehensible style with good clear diagrams preventing a monotony of text. The authors are amongst the most senior authoritative scientists in the carbohydrate area, having published valuable works over a number of years; they have achieved similar status with this volume which is a further tribute to their reputation and ability to move with the times. This edition comes very highly recommended, equally of interest to chemists, biochemists, and biologists.

John F. Kennedy
Andrew D. Suett

A Functional Analysis of Lignins and Their Derivatives.
By G.F. Zakis. Tappi, Atlanta, USA, 1994. 94 pp. Price £79.00 ISBN 0-89852-258-7 (available in Europe exclusively from American Technical Publisher Ltd, Herts, UK).

If you work in the area of plant biology, wood, chemistry or paper science, lignin is an inevitable polymer for study. However, this is not easy owing to the complexity of its macromolecular structure.

Apart from the biological importance of lignin, it does not presently play a vital role in industry possibly due to its complexity. Although many existing volumes discuss novel applications, structure and the chemical and biological degradation of lignin, few, however, focus on each of the multifunctional groups of lignins (e.g. methoxy, hydroxyl and carbonyl groups) in any detail, though the knowledge of each functional group is essential in understanding lignins.

A Functional Analysis of Lignins and Their Derivatives provides detailed chemical methods for the analysis of lignins and their derivatives and is composed of five chapters. The physical and chemical properties of lignins and their importance in sample preparation are described in Chapter 1. Methoxy groups are determined by the methods of Zeisel-Viebböck-Schwappach, Kirpal and Bühn, or by methanol elimination (Chapter 2), Chapter 3 focuses on methods for the determination of various types of hydroxyl groups (including acidic hydroxyl groups, phenol hydroxyl groups, guaiacyl phenol groups, catechol, *p*-hydroxy and *p*-alkoxybenzyl alcohols, and carboxyl groups). Carbonyl group determination (by oximation, gasometric borohydride, and spectrophotometric methods) are discussed in Chapter 4, which also includes methods for the determination of quinone carbonyl groups and the preparation of reduced lignin. Analysis of acidic groups of lignosulphonic acids and nitrogen-containing lignin derivatives are discussed in Chapters 5 and 6, respectively.

This book practically describes analytically important methodologies, by referring to their principles, experimental apparatus set-up, calculation methods, and provides examples of results, which will aid all students and researchers involved the study of lignin materials.

John F. Kennedy
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