

more detailed discussions, including heterogeneous systems, water mobility, molecular motions, and enzyme activity, which are covered in later chapters. An informative chapter focuses on the glass transition in sugar–water systems. Water acts as a universal plasticizer for the carbohydrate structure and therefore strongly influences the temperature at which the glass transition occurs, which can be of paramount importance in food applications.

The next six chapters cover the analysis and authentication of foodstuffs including the application of high resolution NMR and SNIF-NMR. Such techniques have proved to be invaluable in the detection and monitoring of food adulteration. Specific application examples discussed in this section include the analysis of lactic acid bacteria to aid in the understanding of wine fermentation and the monitoring of trace amino acid profiles as a fingerprint in European wine analysis. The application of magnetic resonance techniques to the study of nutrition is presented in a subsequent section. Such methodologies can be utilised to aid our understanding of human metabolism and disease.

Food systems pose interesting and important problems with respect to rapid, non-invasive analytical techniques, and the final section involves the study of biopolymers in such complex systems. Specific topics include water–macromolecular interactions in chocolate and the analysis of cereal proteins. A chapter in this section discusses conformational and dynamic analysis of polysaccharide gels. The gel-forming ability of a number of polysaccharides, e.g. curdlan, starch, pectin and carrageenan, is a crucial physico-chemical attribute in many food applications, such as in the manufacture of marmalade.

This volume presents a detailed up-to-date account of research in this constantly advancing area of food science through contributions by experts who demonstrate the importance of magnetic resonance in food science and nutrition, and the application of such techniques to industrial processes. It is therefore highly recommended to individuals with interests in the food science sector, as well as those interested in applications of spectroscopic techniques.

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Liquid Chromatography of Oligomers. C.V. Uglea (ed.), Marcel Dekker, New York, USA, 1996, 344 pp., price \$150.00, ISBN 0-8247-9720-5

Anyone working in the area of separation science is very familiar with the use of chromatography for identifying the qualitative and quantitative composition of complex mixtures. Those working with small molecules, pharmaceuticals, additives, plasticisers, food components etc. will know the value of high performance liquid chromatography for sample analysis while polymer chemists will

know the value of gel permeation chromatography in characterising polymers for molecular weight and distribution parameters. The application of liquid chromatography to the analysis and characterisation of oligomers is less familiar although the technique would be eminently suitable. The book attempts to address the specific use of the technique for this application.

There are four chapters in this book, the first two are relatively short and deal with the definition, history and nomenclature and also molecular nonhomogeneity of synthetic oligomers. This includes specific characteristics of oligomers which must be considered when attempting to develop a separation or interpret data. The third and fourth chapters deal with liquid chromatography and gel permeation chromatography respectively. In the chapter dealing with liquid chromatography, there is extensive treatment of the theory of the technique and also information on types of column packings, the chemistry of their production and suppliers. The parts of the chromatograph are discussed, methods of detection and detectors as well as lists of equipment suppliers are included. Much of the information relates to all types of liquid chromatography separations and isn't specifically relevant to the analysis of oligomers. Applications of the technique for oligomer characterization are tabulated with a literature reference. The gel permeation chromatography chapter follows the same format, theory, types of packing materials, non-size exclusion effects, and practical considerations. Again applications are tabulated with a literature reference. Indeed, the book lists approximately 1500 references, some of which are essential if information on actual separations are required as none is given in the text.

Although the author has identified an area of liquid chromatography which is under utilised the lack of information on actual separations which can be achieved limits its usefulness. Indeed there is not a single chromatogram of a "real" oligomer separation in the book. For any scientist with experience in liquid chromatography, this book is of limited use being merely a source of references but for people working with oligomers and who have no experience of the technique and wish to understand the theory it may be of some interest.

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Food: The Chemistry of its Components (third edition). T.P. Coultate (ed.), Royal Society of Chemistry, Cambridge, 1996, xii + 360 pp., price £14.50, ISBN 0 85404 513 9

Public awareness of the chemistry of food and food processing has increased dramatically in recent years as