

## Book reviews

***Specialist Periodical Reports: Carbohydrate Chemistry*; Vol. 29; R.J. Ferrier (Ed.); xvii + 438 pages, ISBN 0-85404-213-X, £170.00**

Historically, the Royal Society of Chemistry has published *Specialist Periodical Reports* since 1967. Volume 29 of the carbohydrate chemistry series, reviews the literature that was published in 1995, which relates specifically to monosaccharides, disaccharides and certain specific oligosaccharides.

The book consists of 24 chapters that can be divided roughly into four sections. After a brief introduction, the book examines the published literature detailing the various synthetic, enzymatic and chemoenzymatic methods used to prepare monosaccharides, disaccharides (including glycosides) and various oligosaccharides. Glycosyl halides are of immense value in glycoside synthesis, and fluorides are now commonly used.

The second part of the book is devoted to carbohydrate derivatives, this is also by far the largest section of the book (sixteen chapters are included in this section). In aqueous solution  $\text{Pb}^{2+}$  ions have been found to form complexes with D-talopyranose and D-talofuranose, whereas  $\text{Hg}^{2+}$  ions do not. Section 3 also includes a review of the literature regarding inorganic derivatives.

A number of ureido sugar derivatives have been examined by  $^1\text{H}$ ,  $^{13}\text{C}$  and  $^{15}\text{N}$  NMR spectroscopy. The data indicates that replacement of one amino acid residue by another has no significant effect on the conformation of the glucopyranose moiety. The literature covering the techniques employed in the analysis of carbohydrates is detailed in section three, where special emphasis has been given to NMR spectroscopy.

The book concludes with a review of the published literature concerning synthesis of enantiomerically pure non-carbohydrate compounds.

Overall this is an extremely detailed and informative volume, that will be a valuable reference point of access to primary literature for those scientists involved in the field of carbohydrate research.

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***Functional Properties of Food Macromolecules*; S.E. Hill, E.A. Ledward, J.R. Mitchell (Eds.); Aspen Publishers, Gaithersburg; 2nd edition; 1998, xvi + 348 pages, ISBN 0-7517-0421-7, US\$ 176.00**

Food technologists need to understand the underlying science behind the behaviour of individual and combined ingredients in formulated food products. Research into the interactions between macromolecules and water and the solution properties of food biopolymers in recent years has resulted in significant advances in the understanding of such phenomena, which are fundamental to our comprehension of the functional properties of food macromolecules. The first two chapters in this volume are therefore concerned with such important aspects and cover dilute solution viscometry of food biopolymers, and water and food macromolecules, respectively.

The most important feature of proteins and polysaccharides is their ability to dictate or modify the structure of a food and therefore be largely responsible for the perceived texture or 'mouthfeel'. Under appropriate conditions many polysaccharides and proteins associate, resulting in gelation at high water levels. Knowledge of the gelation behaviour of both polysaccharides and proteins continues to advance and is discussed in chapters covering the gelation of globular proteins, and the gelation of polysaccharides, respectively. Gelation behaviour is primarily concerned with high water systems, which are relevant to some food systems. Inclusion of a chapter covering the structural properties of high solids biopolymer systems therefore aims to complete the overall picture. Protein–polysaccharide interactions have been the subject of the most research in the food biopolymer area in recent years and a chapter is devoted to the functional properties of protein-polysaccharide mixtures.

A major development in food science since the first edition of this book is the growing interest in the use of high pressure to preserve and process a range of foods. Such techniques are detailed in this volume and are also of interest with respect to colloid science because of their potential for the manipulation of functional properties of biopolymers, especially proteins, in an environmentally friendly way. A chapter detailing the complex phenomena of emulsions and foams has been expanded and developed since the first edition.

This volume covers a range of interrelated functional properties that are of central importance in food product development. It does not attempt to cover all aspects of biopolymer functionality, but concentrates on areas where