

chemical and pharmaceutical industry and academia, as well as for manufacturers of analytical instruments.

Nahid Turan  
John F. Kennedy\*

*ChembioTech Laboratories,  
University of Birmingham Research Park,  
Vincent Drive,  
Birmingham B15 2SQ, UK*

*E-mail address:* jfkennedy@chemistry.bham.ac.uk

\* Corresponding author. Address: Birmingham Carbohydrate and Protein Technology Group, School of Chemistry, Birmingham B15 2TT, UK. Tel.: +121-414-7029; fax: +121-414-7030.

0144-8617/01/\$ - see front matter © 2001 Elsevier Science Ltd. All rights reserved.

PII: S0144-8617(01)00226-0

### Carbohydrates

Paul Finch (Ed.); Kluwer Academic, Dordrecht, 1999, xii + 334 pp., ISBN 0-751-40235-4, £104.00

Increasing awareness of the roles of carbohydrates in biological recognition and regulation has brought about a resurgence of interest in carbohydrate chemistry. The advancements made in recent years in theoretical, physical and synthetic methods have enabled scientists to research further into the properties of carbohydrates and their potential for exploitation. In *Carbohydrates*, a contemporary view of our knowledge of the structures and syntheses of monosaccharides, oligosaccharides and glycopeptide units is presented, as well as the properties of some important examples and derivatives including sulphates and polysaccharides.

The book contains 9 chapters, each containing an introduction as well as detailed referencing. The chapters cover: the geometry and dynamics of monosaccharides and oligosaccharides; the chemical synthesis of monosaccharides; the conjugation of monosaccharides — synthesis of glycosidic linkages in glycosides, oligosaccharides and polysaccharides; the chemistry of glycopeptides; the shapes and interactions of polysaccharide chains; and the chemistry of polysaccharide modification and degradation. A chapter examining carbohydrate sulphates is also included, given that although the structural and mechanical role of sulphates is pre-eminent, several more subtle functions are beginning to emerge. The final chapter discusses carbohydrate–protein interactions. This is a subject of intense contemporary study because of its key importance in the regulatory roles of carbohydrates.

In *Carbohydrates*, an authoritative overview of the current status of some particular areas of structural and synthetic carbohydrate chemistry is presented, with the

aim of underpinning the steady increase in the perception and understanding of the roles of carbohydrates in nature. This very detailed and comprehensive book is written by established experts in the field of carbohydrate chemistry, and provides an informed perspective on key areas of carbohydrate chemistry.

Mercedes G. Garaita  
John F. Kennedy\*

*ChembioTech Laboratories,  
University of Birmingham Research Park,  
Vincent Drive,  
Birmingham B15 2SQ, UK*

*E-mail address:* jfkennedy@chemistry.bham.ac.uk

\* Corresponding author. Address: Birmingham Carbohydrate and Protein Technology Group, School of Chemistry, Birmingham B15 2TT, UK. Tel.: +121-414-7029; fax: +121-414-7030.

0144-8617/01/\$ - see front matter © 2001 Elsevier Science Ltd. All rights reserved.

PII: S0144-8617(01)00225-9

### Novel Macromolecules in Food Systems

G. Doxastakis, V. Kiosseoglou (Eds.); Elsevier, Amsterdam, 2000, 468 pages, ISBN 0-444-82932-6, £127.00

Polysaccharides and proteins are essential ingredients in both natural and processed foods: they perform key roles that include thickening, stabilisation, gelation and encapsulation. To a large extent, they determine shelf-life, texture and nutritional quality. Advances are continually being sought by developing new macromolecules that perform better than their traditional competitors. Using recent innovations in biological and physical sciences, scientists have created novel food ingredients chemically, microbiologically and enzymatically. As research and technological information in this field is increasing rapidly, it is becoming increasingly difficult to keep track, both of innovations in the field of novel macromolecules and of developments of novel uses for traditional ones.

*Novel Macromolecules in Food Systems* provides a fundamental understanding of novel uses of traditional biopolymers as well as establishing the nature of structure/physicochemical relationships of novel macromolecules in applications where they replace or complement their existing counterparts. The book comprises seventeen chapters that cover the latest information on preparative methods, chemistry, structure and functionality of novel biopolymers or novel applications of more traditional macromolecules. A number of chapters are grouped into those dealing with novel proteins and novel polysaccharides: two chapters cover the interface between these

two principal types of food biopolymers. The final chapter deals with legal aspects and specifications of biopolymers targeted for use in foods.

This book is well presented, each chapter having its own extensive set of references. It is highly recommended as an invaluable aid to anyone working in food product development and fundamental research.

John F. Kennedy\*  
Michael Thorley

*ChembioTech Laboratories,  
University of Birmingham Research Park,  
Vincent Drive,  
Birmingham B15 2SQ, UK*

\* Corresponding author. Address: Birmingham Carbohydrate and Protein Technology Group, School of Chemistry, Birmingham B15 2TT, UK. Tel.: +121-414-7029; fax: +121-414-7030.

0144-8617/01/\$ - see front matter © 2001 Elsevier Science Ltd. All rights reserved.  
PII: S0144-8617(01)00228-4

### **Food Product Design**

R. Hu; Technomic Publishing Co. Inc., Lancaster (PA), 2000, 240 pages, ISBN 1-56676-743-1, £122.00

Successful food product design is targeted towards achieving product excellence at the lowest overall cost. This encompasses a number of key areas: optimisation of food products and/or processes, acceleration of food development cycles, reduction of research costs to facilitate transition from R & D to manufacturing, and effective troubleshooting of manufacturing problems. With the advent and rapid development of computer-aided statistical methods there is a need for food product developers to appreciate their utility and application, whether or not they have extensive statistics or computer training.

*Food Product Design* is aimed at familiarising the reader with the method of statistical product design and encouraging its application in food product design with the aid of widely available, up-to-date computer software. In addition to basic concepts of statistical food product design, the book presents the most effective techniques for trial design, modelling and experimental data analysis. Numerous small BASIC computer programs are included with original codes and worked examples from real-life research situations. The first chapter introduces common problems in food product design, and compares and contrasts the traditional and modern statistical approaches for solving them: general steps in the statistical approach are explained. Succeeding chapters cover problems of food product design, food process modelling and optimisation, and modelling and

optimisation for combined food recipe and process design. The final chapter introduces a new aspect of computer applications, an expert system for food product development, including an introduction to fuzzy logic and neural networks.

This book describes the use of computer software to solve the real problems that occur in product design. It is recommended as a tool for food engineers, technologists, scientists and others to both expand and update their knowledge of computer-aided statistical methods for food product design.

John F. Kennedy\*  
Michael Thorley  
*ChembioTech Laboratories,  
University of Birmingham Research Park,  
Vincent Drive,  
Birmingham B15 2SQ, UK*

\* Corresponding author. Address: Birmingham Carbohydrate and Protein Technology Group, School of Chemistry, Birmingham B15 2TT, UK. Tel.: +121-414-7029; fax: +121-414-7030.

0144-8617/01/\$ - see front matter © 2001 Elsevier Science Ltd. All rights reserved.  
PII: S0144-8617(01)00227-2

### **Chemical Analysis**

F. Rouessac, A. Rouessac; Wiley, Chichester, 2000, 445 pages, ISBN 0-471-98137-0, £65.00

Over recent decades, there has been phenomenal evolution and innovation in the field of chemical analysis. Rapid advances in both electronics and computing have led to the development of many new approaches based on physical measurements. There is a vast array of instrumental techniques available today that are more sensitive, precise and accurate than many of their predecessors. These can be applied to analytical problems in many areas in which structure determination and quantitation of chemical species are needed. Furthermore, the combination of two or more instrumental techniques has led to the advent of 'hyphenated methods' that are extremely powerful but require understanding of the basic principles. There is a need to acquire the knowledge necessary to not only understand the novel techniques, but also to gain an overview of their potential areas of application.

*Chemical Analysis* provides the reader with an insight into many of the modern instrumentation methods and techniques, focusing on the instrumental side rather than attempting to cover all the background theory. The book is carefully structured into three parts: the first covers separation methods, the second spectral methods, and the