els, which are followed by a short survey of novel models such as dynamic self-assembled monolayers and models based on cells, bacteria, and viruses. The comparison of the various kinds of models, presented at the end of the chapter, can be very useful in enabling researchers to design the most suitable model for their studies.

The second chapter describes a few examples of carbohydrate–carbohydrate interactions in natural and model systems (carbohydrate–carbohydrate interactions involved in the formation of the structural network of the extracellular matrix and in the cell walls of bacteria and plants are not included). The chapter concludes with the very few reported examples of thermodynamic data on carbohydrate–carbohydrate interactions.

The third and fourth chapters describe, respectively, the use of SPR and AFM to study interactions between saccharides. The two techniques are described in a simple but detailed fashion and again many examples are presented.

The fifth chapter analyzes the recognition phenomena taking place in the presence of amphiphilic carbohydrates, ranging from cyclodextrins to glycolipids and glycoproteins.

The sixth chapter is another interesting review written by T. D. James and S. Shinkai. These authors, who are very active in this area, describe in detail the chemistry and the application of sugar receptors based on boronic acids. These compounds are at present the only kind of artificial receptors for sugars that are truly able to work in aqueous solutions and they offer interesting perspectives.

The last chapter returns to the concept of multivalency already discussed in the first chapter. The importance of the design of a multivalent carbohydrate ligand needed to influence biological processes such as carbohydrate–protein interactions is explained in detail.

The particular value of this book is that it gathers together much information about different techniques and research areas having carbohydrate recognition as a common denominator. The layout of the book makes a good impression, but the absence of a keyword index is inconvenient. The many drawings and schemes throughout the book are in general correct and very clear, facilitating the understanding of the text.

This book is a useful and easily readable monograph about a subject that is rapidly growing in importance and, in our opinion, the heterogeneity of the various chapters has to be counted as an advantage. In conclusion, *Host–Guest Chemistry* can be highly recommended to beginners in the field of carbohydrate recognition.

Joop A. Peters, Luca Frullano
Delft University of Technology
Delft (The Netherlands)

Encyclopedia of Chemical Physics and Physical Chemistry. Vols. 1–3. Edited by *John H. Moore* and *Nicholas D. Spencer*. Institute of Physics Publishing, Bristol 2001. Over 3000 pp., hardcover $ 750.00.—ISBN 0-7503-0313-1

Over 100 years since the beginnings of physical chemistry, now for the first time we have a comprehensive encyclopedia of this discipline. According to the definition of physical chemistry as an interdisciplinary field between physics and chemistry, the undertaking is not expected to be easy. Robin Hochstrasse rightly says in his preface that the committed chemical physicist or physical chemist must be a jack-of-all-trades, who deals both with physical phenomena of chemical processes and with the influence of physical variables on those processes. In addition he examines substances and processes by using physical methods, and tries to describe and explain them by using physical ideas and methods. Today this means to have mastered the basics thoroughly, to further develop the techniques, and to apply them in the various fields from materials science to biology.

The editors-in-chief John Moore and Nicholas Spencer have not only faced this marathon challenge but solved the problem with style. They have recruited a top-flight team of authors for the three-volume *Encyclopedia of Chemical Physics and Physical Chemistry*. 127 authors provide a full range of information on established and modern fields of physical chemical knowledge. Almost one hundred articles add up to more than 3000 pages. The structure of the encyclopedia is simple. The first volume presents the fundamentals such as microscopics, thermodynamics, and statistics as well as dynamic processes. The second volume comprises the broad range of theoretical and experimental methods for determining the properties of molecules and materials. The third volume concentrates on applications of the basic principles and methods in modern fields of physical chemistry. Chapters on single-molecule spectroscopy, clusters, and fullerenes, continuing up to zeolites, colloids, and semiconductors, span the whole gamut between the microscopic and macroscopic worlds.

This balancing act between traditional and ultramodern physical chemistry succeeds. Some techniques and methods that were subjects of recent Nobel Prize awards, such as ultrafast spectroscopy, can be found here, as well as the mature field of thermodynamics. The modern chapters especially cross-refer to each other and underline that physical chemistry and chemical physics are closely related fields of study. The cross-references excite the reader's interest and stimulate him or her to examine other volumes or topics. For example, readers who are thrilled by the inspiring chapter about fullerenes will wish to know how the methods for preparing the buckyball molecules work in detail. Sometimes they may wish to look up the fundamentals, while on the other hand, after intensively studying the basic principles and methods, one wants to know how things can be used in practice.

However, not all chapters are sufficiently linked up. For example, in Chapter B1.4 of the applications volume, "Microwave and terahertz spectroscopy", the technique of far-infrared vibration-rotation-tunneling spectroscopy (FIR-VRTS) is introduced. Water clusters are discussed as an example of systems that can be investigated by this method. The quotation as well as the figure are taken from a doctoral dissertation. In Chapter C1.3, "Van der Waals molecules", of the same volume, water clusters are also discussed, but without referring to Chapter B1.4, which introduces the FIR-VRTS method. Results of ab initio calculations on such associates are shown in the applications volume,

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whereas the experimentally measured structures are given in Chapter B1.4. On the other hand, the authors of Chapter C1.3 in the applications volume are more up-to-date and refer to recent journal articles based on the dissertation work.

Searching for keywords such as NMR relaxation or NMR imaging in the methods-oriented chapters usually leads one to substantial articles and plenty of cross-references to the original literature. Sometimes, however, they fail to mention the "Further Reading" list at the end of each chapter.

This encyclopedia is more than a successful work of reference. Each chapter stands by itself and is interesting to read. Naturally the expert, for example, a quantum chemist or an NMR spectroscopist, can get more detailed information from collected editions and encyclopedias coming from their own fields. But it is exactly the merit of this encyclopedia that it underlines the character of physical chemistry and chemical physics as sciences without clearly defined borderlines and provides the links between theory and experiment, between soft and hard matter, and the various time scales and length scales.

The results of the latest research can be found in this encyclopedia. It covers topics as varied as single-molecule spectroscopy of semiconductor nanoparticles and new ideas for describing the process of protein folding. However, modern theoretical methods may have deserved some more attention. For example, the recently successful Car-Parinello molecular dynamics simulations (CPMD) are mentioned only in passing (Vol. III, B3.3.11).

University libraries are strongly recommended to buy this encyclopedia, and all research groups working in the field should add this three-volume work to their reference books.

Ralf Ludwig
Fachbereich Chemie,
Physikalische Chemie
Universität Dortmund (Germany)

Handbook of Chemical Health and Safety. Edited by *Robert J. Alaimo.* Oxford University Press, Oxford 2001. 652 pp., hardcover £ 145.00.—ISBN 0-8412-3670-4

This multiauthor book is designed for those who are responsible for the safe use of chemicals or industrial equipment but do not have a specific training in these areas. That includes everyone who handles chemicals in the laboratory, as well as their supervisors, and those who are responsible for the safety of the employees in a company and for contractors and visitors.

The aspects covered include risk assessment, setting standards to control workplace exposure, the communication of this information, exposure monitoring, and measures for safe handling and storage of chemicals to ensure the safety of the employees and the public. The book also describes procedures for proper emergency management, the safety aspects of laboratory equipment and laboratory design, as well as the management of hazardous chemicals and radiological and biological materials and their disposal. All necessary information on the different topics is provided. However, the reader interested in the underlying concepts and philosophies is referred to other sources.

Although the book specifically addresses the situation in North America, the information provided can be useful for all who deal with the safe use of materials in industry. I am not aware of any other book which provides such comprehensive information on this practical issue of the handling of industrial materials.

Helmut Greim
Institut für Toxikologie und
Umwelthygiene
Technische Universität München
Freising-Weihenstephan (Germany)

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