

Additions and Corrections

The Aqueous Phase Behavior of Surfactants [*J. Am. Chem. Soc.* **1995**, *117*, 6639]. ROBERT G. LAUGHLIN (REVIEWED BY JUAN H. VERA)

The word "Phase" was omitted from the printed title.

The price is £70 (not \$70 as printed).

JA955027A

Book Reviews

Membrane Separations Technology—Principles and Applications. By R. D. Noble (University of Colorado, Boulder) and S. A. Stern (Syracuse University). Elsevier: Amsterdam and New York. 1995. xx + 718 pp. \$340.00. ISBN 0-444-81633-X.

This book is a state-of-the-art summary of rapidly growing membrane separation technologies including reverse osmosis, ultrafiltration, microfiltration, pervaporation, membrane vapor separation, electromembrane processes, liquid membrane, membrane bioseparation, food applications, membrane contactor, membrane gas separation, and catalytic membrane reactor. The contributors are well selected among people who are currently the most active in each respective field. They are also very experienced in writing, which has made each chapter easy to read and sometimes even entertaining. This book is certainly very valuable to have a quick overview of membrane technologies and to know where you are standing now and where you are heading for in the future. The editors were therefore extremely successful in fulfilling one of the objectives of the book, i.e. to provide the reader with an authoritative resource of membrane technology.

They were, however, not necessarily successful in fulfilling another objective of the text, i.e. to present *principles* and applications of membrane separation processes. Since a large number of contributors are involved, it is difficult to maintain uniformity throughout the book. Some chapters are very intensive in discussion (Chapters 5, 6, 11, and 12), while others are less so. Some chapters (Chapters 2, 10, and 11) are focused on theory, while emphasis is more on applications and economics in others (Chapters 9 and 13), depending on the character of each author's contribution to the field. The nonuniformity of chapters may still be tolerable. It is more serious that discussions were made insufficiently, or are missing completely, on several important issues. For example, hardly any discussions were made on polymeric membrane materials, membrane formation, and membrane transport concerning the membrane gas separation process, even though three chapters were dedicated to describing the latter process. It is rather surprising when considering that one of the editors is an authority in this field. In general, the reviewer cannot help getting the impression that some contributors purposely avoided in-depth fundamental discussions to render the chapter more readable. A knowledgeable person who seeks very detailed information would not be satisfied with this approach.

The references are excellent. Most of the chapters carry 100 or more references, and many of those are from the late 1980s or the early 1990s. In some chapters (Chapters 3, 5, 7, 12, and 14) the past contributions to the subject are summarized in tables together with reference numbers.

A number of printing mistakes have been found, especially in equations. Nomenclature is not sufficient in some chapters, which make it sometimes difficult to follow mathematical derivations.

The price of the book is too high for an individual to purchase a copy. It is also difficult to place a purchase request under the current tight budget restrictions at almost every library.

Despite the criticism stated above, this reviewer believes that this is one of the best books on membrane separation technologies published recently. It is highly recommended to place an order through your library if the budget would allow.

Takeshi Matsuura, *University of Ottawa*

JA9551650

Porosity in Carbons: Characterization and Applications. Edited by J. W. Patrick (University of Technology, Loughborough). Halsted Press: New York and Toronto. 1995. ix + 331 pp. \$89.95. ISBN 0-470-23454-7.

This is a timely book because porosity is important for all aspects of utilization of these versatile and complex materials. Indeed, as the editor points out, porosity in carbons means different things to different people, depending on the intended application of these materials. It will not be long before we find out that porosity in fullerenes and carbon nanotubes is an important issue.

The book displays an excellent selection of topics covering both fundamentals and applications. The individual chapters are written by scientists who are considered to be experts in their respective fields. J. Byrne and H. Marsh give an introductory overview; K. S. W. Sing provides a brief summary of main issues in the physisorption of gases; H. F. Stoeckli analyzes in some detail the ever-important and still somewhat controversial characterization of microporous carbons by adsorption and immersion techniques; B. McEnaney and T. J. Mays discuss the often neglected characterization of macropores in carbons; H.-J. Mühlen and K. H. van Heek briefly discuss the relationship between carbon porosity and gasification reactivity; the late B. T. Kelly provides an overview of the perhaps resurgent issue of radiation-induced porosity and reactivity of graphite; J. W. Patrick and A. Walker briefly discuss the effect of porosity on the strength of cokes and carbon electrodes; A. Bailey reviews the application of active carbons for gas separation and respiratory protection; F. Derbyshire, M. Jagtoyen, and M. Thwaites summarize the production and applications of activated carbons; F. Rodríguez-Reinoso reviews the use of carbon as a catalyst support; N. D. Parkyn and D. F. Quinn discuss adsorption of natural gas on carbon. Understandably, the emphasis is on the characterization and applications of activated carbons, where porosity plays a crucial role. Most applications of current interest are covered (natural gas storage, catalyst supports, and gas separation). Perhaps a separate chapter on liquid-phase adsorption could have been included, in view of the increasing demands on carbon adsorbents in water purification. But overall, this is a book that fulfills its (modest?) objective, to make the reader aware of the different meanings of the concept of porosity in different carbon applications.

The book is also the victim of the times we live in. Edited books face two (often insurmountable) challenges: (a) complementarity of chapters, in both style and content, and (b) minimization of time elapsed between first and last author contribution. This book appears to have met successfully the first challenge, but it failed rather dramatically on the second one. Out of more than 700 literature citations in the 11 chapters, less than 5% are post-1990. In particular, Chapters 10 and 11, dealing with topics of growing scientific interest (catalyst supports and natural gas storage), are deficient in this regard, the former with 1% of the references published after 1990 and the latter with none at all. So the reader who is looking for that increasingly rare (extinct?) species called *authoritative and state-of-the-art review* will not be completely satisfied. But *much* valuable information is provided in this book, especially for the increasing number of us who simply need to catch up with basic concepts in this multidisciplinary field.

Ljubisa R. Radovic, *The Pennsylvania State University*

JA955110Y

Enzyme Handbook 8. Edited by D. Schomburg and D. Stephan (GBF, Braunschweig). Springer-Verlag: Berlin. 1994. xvi + 100 pp. \$174.00. ISBN 0-387-57837-4.

Like the previous volumes, it is a collection of loose-leaf data sheets generated from the database "Brenda". The authors set out in 1990 to make information about enzymes available in a format that scientists not versed in enzymology could have enough information to consider use of enzymes in their works, be they in chemical industry, food, or environmental technology. The enzymes examined in the handbook are arranged according to the 1984 Enzyme Commission list of enzymes and later supplements. This volume deals with Class 1.13–1.97: Oxidoreductases. It gives a good overview of molecular properties of the enzymes and includes bibliographic references and an index. For example, for the enzyme catechol 2,3-dioxygenase, it gives information available on nomenclature, reaction and specificity, structure, isolation/preparation, stability, cross references to structure databanks, and literature references in a concise manner. Under the topics of reaction and specificity, it gives information on the catalyzed reaction, reaction type, natural substrates, substrate spectrum, product spectrum, inhibitors, cofactor(s)/prosthetic group(s)/activating agents, metal compounds/salts, turnover number, specific gravity, K_m value, and range and optimum for pH as well as for temperature.

An organic chemist considering use of an enzyme as a catalyst for a particular reaction will find this series to be a very valuable source, first for deciding on the feasibility of an enzyme as a catalyst for the reaction under consideration and then as a source of primary literature on the enzyme of interest. Others in the chemical, food, and environmental technology areas may find it to be just as useful. However, there are only few references that are less than five years old. It is strongly recommended for library acquisitions, and laboratories heavily involved in enzymology may wish to keep a copy handy.

Adeboye Adejare, *University of Missouri—Kansas City*

JA9451527

Chemical Approaches to the Synthesis of Inorganic Materials. By C. N. R. Rao (Indian Institute of Science). John Wiley & Sons: New York. 1993. 102 pp. \$27.95. ISBN 0-470-23431-8.

In a world awash with detailed, highly specialized research publications, there is a great need for books which provide a broad introductory overview of unfamiliar areas. Despite the importance of solid state chemistry, it is an area whose synthetic methodology is quite different from what most of us are familiar with. This book sets out to survey the synthetic techniques of solid state chemistry. It is targeted at the well-educated chemist who is reasonably familiar with synthetic methodology in other areas and has substantial knowledge of the physical techniques for structure determination.

The book introduces the reader to the various synthetic approaches in 20 very concise chapters and a total of 98 pages. Each chapter is focused on a single technique or class of compounds, and each provides references to more specialized reviews as well as representative research papers. The chapters are largely independent of each other and could be read in any order. Diagrams of synthetic apparatuses are a major feature. No effort is made to be comprehensive—the author does a good job in restraining himself to conveying the "big picture".

The book is recommended for the chemist who wishes to survey the synthetic methods of solid state chemistry. Surely this is a book that every instructor of inorganic chemistry should be familiar with and should recommend as a reference to students who may some day need a starting point for reading up on solid state synthetic techniques. The book is not designed to be a textbook or treatise on the subject. The reader will find the writing highly compressed. Some figures are not explained in enough detail that they can be understood by the nonspecialist. The reader often will be obliged to refer to the references if any depth of understanding is sought. This comment is not intended as a severe criticism of the book. Rather it is a natural consequence of the author's effort to provide an introductory overview to busy people.

Edwin H. Abbott, *Montana State University*

JA9551897

Microcharacterization of Proteins. Edited by Roland Kellner (Johannes Gutenberg University), Friedrich Lottspeich (Max Planck Institute for Biochemistry), and Helmut E. Meyer (Ruhr University Bochum). VCH: Weinheim, Germany. 1994. xvi + 267 pp. \$75.00. ISBN 3-527-30048-1.

This is a valuable book that discusses in depth the most current technologies for the analysis of proteins and peptides, an important field that is crucial to the advancement of a number of endeavors in the biosciences and biotechnology. For example, in the work on the human genome project, protein analysis is vital in helping to elucidate the functions of the large number of DNA segments that are being sequenced.

This book is comprehensive in that all the major topics in the field of protein and peptide analysis are covered. Typically, each chapter gives complete background information on the method being discussed, extensive practical information on the use of the method, and example applications that are well illustrated. The topics of the chapters of this book are as follows: chemical and enzymatic fragmentation of proteins, high-performance liquid chromatography, capillary electrophoresis, gel electrophoresis, electroblotting, amino acid analysis, the Edman degradation, analysis of post-translational protein modifications, matrix-assisted laser desorption/ionization (MALDI) mass spectrometry, electrospray mass spectrometry, sequence analysis by mass spectrometry, protein sequences and sequence databases, mass spectrometry data for protein sequence analysis, and software packages for personal computers.

The book is well organized and well illustrated through the abundant use of figures. In many of the chapters, however, these are punctuation errors, awkward phrasings, misspellings, and/or typographical errors that are distracting. Overall, though, this a very worthwhile book that is unique in its comprehensive approach to current protein analysis methods. Anyone who deals in any respect with protein and peptide analyses should seriously consider purchasing this book for his or her personal library.

Roger G. Harrison, *University of Oklahoma*

JA955131S

Fluorine Chemistry: A Comprehensive Treatment. Edited by Mary Howe-Grant. Wiley: New York. 1995. xi + 528 pp. \$79.95. ISBN 0-471-12031-6.

This volume brings together a selection of reprints from Kirk-Othmer Encyclopedia of Chemical Technology, in an effort to create a handy desk reference for fluorine chemists. There are 55 articles contributed by 31 authors, most of whom are from industry.

Following sections on factors, abbreviations, and unit symbols and an introductory article on elemental fluorine itself, the book is essentially divided into two broad chapters dealing with inorganic and organic fluorine compounds. For inorganic fluorine compounds, 33 articles have been compiled. The format of these articles is fairly uniform; the physical and chemical properties, preparation, uses, and environmental and safety aspects are discussed.

In the organic fluorine compounds chapter, direct fluorinations using elemental fluorine, fluorinated aliphatic compounds, fluorinated ethers and amines, fluorinated carboxylic acids, fluorinated alkanesulfonic acids, and fluoroaromatics have been covered. Fluorinated copolymers are the subject of the last nine articles in the book.

In the organofluorine area, whereas the book can be used as a quick reference guide into various categories of reactions, the coverage of the chemistry is by no means extensive. The book will, therefore, not serve as a substitute for sources like *Fluorine in Organic Chemistry* by R. D. Chambers, *Chemistry of Organic Fluorine Compounds* by M. Hudlicky, *Organic Fluorine Chemistry* by Shepard and Sharts, and *Syntheses of Fluoroorganic Compounds* by Knunyants and Yakobson, which are used in teaching and research. Although having a reference source like this in academic libraries is useful, industrial laboratories engaged in manufacturing of fluorine-containing intermediates and materials and their application are more likely to benefit from this compilation.

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