

## Additions and Corrections

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**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

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**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 makes 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*

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