Book Reviews

Membrane Separation Processes

Edited by P. Meares

Elsevier, Amsterdam, 1976, 600 pp. $96.25

The study of transport processes in membrane systems has a long history. Today there is a most extensive literature on the subject accompanied by rapid developments in the field of membrane technology. Much of the interest stems from the possibility of using membranes in separation processes and the importance of membrane phenomena in the biological and related fields. This book deals with the role of membranes, almost exclusively polymer membranes, in separation processes. Some indication of the diverse nature of the transport process and applications is given by the chapter headings. The first chapter 'The physical chemistry of transport and separation by membranes' by the editor serves as an introduction to membrane types, mechanisms of transport and methods of analysis. This is followed by chapters on 'Liquid permeation through polymeric membranes', by H. D. Spriggs and N. N. Li; 'Principles and practice of ultrafiltration', by W. F. Blatt; 'Reverse osmosis (hyperfiltration) in water desalination', by F. L. Harris, G. B. Humphreys and K. S. Spiegler; 'Hollow fibres in reverse osmosis, dialysis, and ultrafiltration', by B. Baum, W. Holley, Jr. and R. A. White; 'Electrodialysis', by G. S. Solt; 'Piezodialysis', by F. B. Leitz; 'The separation of gases by selective permeation', by S. A. Stern; 'Hydrocarbon separation by liquid membrane processes', by R. P. Cahn and N. N. Li; 'Enzyme membranes', by D. Thomas and S. R. Caplan; 'Separators and membranes in electrochemical power sources', by J. A. Lee, W. C. Maskell and F. L. Tye; 'Recent developments in ion-selective membrane electrodes', by R. Bloch and E. Löbel; 'The treatment of aqueous wastes and foods by membrane processes', by D. C. Sammon; 'Biomedical applications of membrane processes', by C. R. Gardner. The articles are written by recognized experts active in research and development and provide as far as is possible up-to-date accounts of the subject matter. It was the intention that the basic science be blended with practical aspects and on the whole this objective is achieved although of necessity some accounts veer more strongly in one direction or the other. Inevitably in a book of this size and nature some degree of overlap in the description of scientific principles pertaining to membrane transport is to be expected; this, however, is not excessive and there is in addition a great deal of useful practical information on topics such as membrane materials separator design and construction, performance and applications. As such the book should appeal to a wide readership and can be recommended as excellent reading for scientists engaged in any aspect of membrane research and development. The book is well produced but the high price is likely to discourage the purchase of personal copies

J. A. Barrie

Molecular Electro-Optics. Part 1. Theory and Methods

Edited by C. T. O'Konski

Marcel Dekker, New York, 1976, 544 pp. SFrs 156

This book is the first of 2 parts of a volume of the above title. Part 2 covers Applications to Biopolymers. It deals with work in a field which, although owing its origin to the electro-optic effect discovered by Kerr in 1875, only came into use for molecular studies after 1940. There are 16 contributors to this part and their work is contained in 14 chapters. 11 authors come from the USA, 2 from the UK and Switzerland, Poland and Germany each provide one. In this specialist field the literature, now extensive, is found mainly in journals of physics, chemistry and biology. This book is in the nature of a reference book where, for the first time, electro-optics applied to molecular characterization is treated. The first chapter serves as an introduction and gives an historical background. Separate chapters then deal with electric birefringence in gases and liquids and in solutions of rigid molecules. Measurements of light scattering, absorption, circular dichroism and optical rotation on substances all of which are subjected to an electric field are fully discussed in a series of chapters. The entrance of the laser into the field is covered by 2 chapters. One deals with electrophoretic light scattering, which is a combination of electrophoresis methods with laser beat frequency spectroscopy, and the other is on non-linear electro-optics. In the latter the laser beam is considered to act both as the modifier of the molecules under examination and the means of measurement of the effects. Electro-optics in the infra-red region and magneto-electro-optics are also discussed. The final chapter has the self explanatory title of quantum theory and calculation of electric polarizability. The book ends with two appendixes, one of which gives an interesting picture of Kerr's life. Each chapter is provided with a comprehensive set of references. Cumulative author and subject indexes appear in Part 2 but these could with advantage also be published in Part 1. One of the contributors points out that a large fraction of current research activity in the field of polymer electro-optics is theoretical and that basic data is scarce. This volume emphasizes this point but it shows the potential of the subject to many research workers who are perhaps familiar with more conventional methods of characterizing polymers and it will prove useful and interesting as a source book to those already in the field.

H. G. Jerrard

Conference Accouncement

European Symposium on Electric Phenomena in Polymer Science

University of Pisa, Pisa, Italy, 29–31 March 1978

The European Symposium on Electric Phenomena in Polymer Science will be held at the University of Pisa, 29–31 March 1978. The aim of the meeting is that of stressing the importance and the relevance of electric phenomena in the different areas of polymer science. Particular emphasis will be placed on the electrochemical initiation of polymerizations and on its possible technological applications (e.g. for coating metal surfaces). The programme will be arranged in three sections. Each section will consist of a limited number of invited lectures and short communications. The Programme committee will consider contributions of interest to the following topics: (1) electrochemistry of ionic polymerizations and related reactions; (2) electrochemical polymerizations; (3) electric properties of polymeric materials. A one-page abstract should reach the chairman of the organizing committee not later than September 15th. Copies of the first circular and other information may be obtained from: Professor P. Giusti, Istituto di Chimica Industriale ed Applicata, Facoltà di Ingegneria, Via Diotisalvi 2, 1-56100 Pisa, Italy.