

## Book Reviews\*

**Annual Reports on the Progress of Chemistry. Volume 80. Section A: Inorganic Chemistry.** Senior Reporter: J. D. Donaldson. Royal Society of Chemistry: London. 1984. xiv + 398 pp. \$99.00. ISBN 0-85186-150-4.

This volume follows the format of recent years; it covers the highlights of the work published during 1983. After an Introduction, one chapter covers the alkali and alkaline earth elements and one chapter covers boron followed by the remainder of that group in another chapter. The carbon and nitrogen groups comprise the next chapter, one chapter includes oxygen and its congeners, and one chapter covers both the halogens and noble gases. For the transition elements one chapter collects the titanium, vanadium, chromium, and manganese groups. Iron, cobalt, and nickel are covered by one reporter in a chapter followed by the six platinum metals. Copper, silver and gold, and zinc, cadmium, and mercury appear next followed by one chapter including scandium, yttrium, the lanthanides, and the actinides. As in recent volumes, this is followed by radiochemistry and a final chapter on industrial chemistry. This last chapter (The fertilizer industry in the year 2000) views the industry as it exists today, summarizing the important inorganic fertilizers. An attempt is then made to project growth of the industry.

The goal of this "Annual Reports" section is to provide wide coverage, highlighting work considered to be of prime importance by the reporters. Thus, it is not a comprehensive review of an area and the researcher may find some gaps in his own area of expertise, but the summaries do serve to show where current activity is concentrated and are a convenient way to browse through areas other than one's own specialty.

The reporters certainly have undertaken a major task. For anyone wishing an overview of an area of inorganic chemistry for 1983, this volume is worth reading.

Ronald A. Krause, *The University of Connecticut*

**Annual Reports on Fermentation Processes. Volume 7.** Edited by George T. Tsao (Purdue University, West Lafayette, Indiana). Academic Press: New York. 1984. ix + 358 pp. \$42.50. ISBN 0-12-040307-2.

The topics covered in this collection of papers range from cellulase production and applications to commercial mushroom production, as well as industrial mammalian cell culture and microbial biomass from renewables. Chapters are also devoted to microbial utilization of gaseous alkanes, fermentation substrates and economics, and the impact of biotechnology on the health care industry. Biochemical engineers, biochemists, and microbiologists should find this book interesting and informative. References are included.

M. C. W. Smith, *Ann Arbor, Michigan*

**Topics in Enzyme and Fermentation Biotechnology. Volume 9.** Edited by Alan Wiseman (University of Surrey, Guildford, England). John Wiley & Sons: New York. 1984. 217 pp. \$49.50.

Five authors have contributed to this volume which contains material of interest to biotechnologists, microbiologists, biochemists, and chemical engineers. Some of the areas covered in the chapter on hydrocarbon-utilizing microorganisms are organisms, substrate range, mechanisms for hydrocarbon uptake and oxidation, and fatty acid degradation. Seventy three pages are devoted to the use of reactive dyes in affinity chromatography, other preparative applications, analytical applications, affinity electrophoresis, and other topics. Applications of immobilized enzymes to fundamental studies on enzyme structure and function and progress with design of enzymes and mimics are discussed in the two remaining chapters. References are included.

M. C. W. Smith, *Ann Arbor, Michigan*

**Soviet Scientific Reviews. Section B: Chemistry Reviews. Volumes 5 and 6.** Edited by M. E. Vol'pin. Harwood Academic Publishers: New York. 1984. Volume 5: x + 379 pp. \$175.00. ISBN 3-7186-0137-0. Volume 6: xiii + 442 pp. \$170.00. ISBN 3-7186-0139-7.

This series has the purpose of making accounts of Russian research available in English to a wider international audience. The reviews were written in Russian, and translation was arranged by the publisher.

Whereas the first four volumes contained material on various branches of chemistry, Volume 5 is devoted to organic fluorine chemistry, and Volume 6 is devoted to organophosphorus chemistry.

Volume 5 contains nine reviews written by well-known Soviet chemists. Various types of perfluoro compounds are treated, along with fluoro nitro compounds, peroxydisulfonyl fluoride, halogen fluorosulfonates, and aromatic compounds having fluorine-containing substituents. Volume 6 contains eight reviews and deals with phosphorus heterocycles as well as open-chain compounds, with phosphorus in uncommon as well as standard valence states and phosphorylating agents.

Neither volume is indexed, but the tables of contents are somewhat detailed. The bibliographies consist largely of references to Soviet sources, but some background references from other countries are helpfully included. References as recent as 1982 are included.

**Symposium Series. Volume 266. Materials for Microlithography. Radiation Sensitive Polymers.** Edited by L. F. Thompson (AT&T Bell Laboratories), C. G. Wilson (International Business Machines), and J. M. J. Frechet (University of Ottawa). American Chemical Society: Washington. 1984. xii + 494 pp. \$59.95. ISBN 0-8412-0871-9.

The technology of lithography, originally a method for printing from images on stone, has moved from the areas of communication and graphic arts to the realm of computers and printed circuits. The 24 articles in the volume deal with its modern applications and are especially concerned with radiation-sensitive polymers. Subject index.

**Carbon Dioxide Thesaurus. A Comprehensive List of Terms in Use in the CO<sub>2</sub> Field.** Technical Information Center, U.S. Department of Energy. Available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA. 1981. 26 pp.

This booklet contains a list of "standardized terms structured to allow consistent machine storage and retrieval of information" on the broad subject of the role of carbon dioxide in scientific, economic, and political arenas.

**Advances in Chemistry Series. Volume 208. Rubber-Modified Thermoset Resins.** Edited by C. Keith Riew (The B. F. Goodrich Co.) and John K. Gilham (Princeton). American Chemical Society: Washington, DC. 1984. x + 372 pp. \$89.95. ISBN 0-8412-0828-X.

This book contains 22 articles based on a symposium held by the American Chemical Society in 1983. Six of them deal with chemistry and physics, six deal with fracture mechanics and failure mechanisms, six are in the area of morphology and failure mechanisms, and four are on applications. Subject index.

**The Design and Application of Process Analyzer Systems.** By Paul E. Mix (DuPont Corp.). John Wiley & Sons: New York. 1984. xiii + 312 pp. \$55.00. ISBN 0471-86518-4.

This book covers the principles of operation for many of the common in-line process analyzers. Devices sensing process stream pH, conductivity, moisture, corrosion, and oxygen are explained. A useful section on photometric process sensors, include ultraviolet, visible, and infrared analyzers, is also provided. This section describes refractometry and light-scattering detectors as well. Brief overviews of in-line process chromatography and of automated density, octane, and acid-base analyzers complete the coverage of sensors.

In the preface, the author indicates that the book is intended for "production, maintenance or technical personnel concerned with the application of process analyzer systems". The treatment of the operation and design of sensors is at a level consistent with that goal. Most of the basic principles of process-sensor operation are discussed in enough detail that very little background in analytical chemistry is required to get a great deal of useful, practical information from the book. The author has even provided discussions on sampling techniques, on troubleshooting, and on safety in the use of analyzers. Designers of process sensors, however, will be disappointed in the references; although many references are provided to manufacturers's bulletins for details of most of the sensors, relatively few references are made to the newer literature.

Steven D. Brown, *Washington State University*

\*Unsigned book reviews are by the Book Review Editor.