

Book Reviews *

Heme Peroxidases. By H. Brian Dunford (University of Alberta). Wiley-VCH, John Wiley and Sons: New York. 1999. xi + 507 pp. \$195.00. ISBN 0-471-24244-6.

This book is the first on heme peroxidases since the 1964 book *Peroxidase* by B. C. Saunders and co-workers at Cambridge University. According to H. Brian Dunford in the preface to *Heme Peroxidases*, "...At that time not a single peroxidase primary sequence had been determined, nor had the first X-ray structure of an enzyme been produced. Many of the peroxidases described in this volume had not been discovered in 1964. A proper classification of heme peroxidases was not published until 1992..."

Chapters 1–3 provide an introduction to and an overview of heme peroxidases, and chapters 4–8 use horseradish peroxidase as a paradigm to illustrate the types of questions that are addressed in studies of heme peroxidases and to introduce the experimental techniques that are used. The remainder of the book, chapters 9–18, builds a foundation of terminology, scientific questions, and experimental techniques for other peroxidases and is more highly focused than the previous chapters.

Heme Peroxidases is a definitive monograph written by a leading expert who has devoted most of his professional life to research on the mechanism of action of the heme-containing peroxidases and catalases. The book is especially strong on the interplay of spectroscopy and kinetics to unravel complex mechanisms in heme peroxidase chemistry. Another strength is the focus on correlating structural data with spectroscopic and kinetic data—the book contains numerous figures of enzyme structure, including nearly 50 stereoscopic views, several of which are in color. The book covers material through the end of 1997 with some from 1998, and contains many references to recent 1990s literature, especially in the area of protein structure.

Unlike many monographs, *Heme Peroxidases* is more than just an "experts" book directed at aficionados in the field. In several sections, it has a textbook quality in addition to being a scholarly monograph. Each kinetic or spectroscopic technique is introduced with a brief, 2–3-page primer on the topic. The primers, most of which are found in chapters 4–8, should allow many nonexperts to read the book without the need to refer to other sources of information. Although the book does not cover the entire field of metalloenzymes, it could be used by interested individuals to provide an excellent and accessible introduction to most of the methods used to study them.

Bruce P. Branchaud, *University of Oregon*

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Interfacial Forces and Fields: Theory and Application. Surfactant Science Series Volume 85. By Jyh-Ping Hsu (National Taiwan University). Marcel Dekker, Inc.: New York and Basel. 1999. xi + 671 pp. ISBN 0-8247-1964-6.

Research at the interfaces of solid, liquid, and gas phases has grown rapidly over the past decade, and current proposed physical models continue to be developed based on older, less rigorous models. This rapid growth, combined with model refinement, has driven much of the current research away from a mechanistic approach to understanding interfacial processes and toward a phenomenological approach. With this trend, the knowledge of elementary colloidal and interface science has become either lost or misinterpreted. In the latest addition to the Surfactant Science Series, Dr. Jyh-Ping Hsu has accepted the challenge of addressing the multitude of physical model inconsistencies via a return to the fundamental principles that apply at the interface.

Empowered with an impressive group of contributors, this book addresses solid-in-liquid interfacial science research with chapters that cover fundamental theory, analytical methods, and development and application of physical models. A cursory review of the book's content by title gives the impression that the book is more focused on electrostatic interactions than electrodynamic interactions. However, combined electrostatic and electrodynamic interactions are clearly developed and applications of these interactions are discussed in the

chapter by Sposito and Grasso (Chapter 5) as well as the chapter by Uyma, Uchida, and Ikada (Chapter 8). The only limitation of this book is that it concentrates more on abiotic colloids than biotic colloidal matter.

In summary, this book is a valuable resource to all researchers investigating interfacial phenomenon. As a reference book, its value lies within chapters that demonstrate surface thermodynamic model development and application. The book's scope has applications for both scientists and engineers in fields ranging from physical chemistry to environmental engineering. In addition, the book is invaluable to students of colloidal science. Although not of the introductory level as other classic textbooks (viz., Hiemenz, P. *Principles of colloid and surface chemistry*; Marcel Dekker, Inc.: New York, 1986; 815 pp), this book provides substantial supplemental information on the specific area of solid-in-liquid interfaces. Each contributor for the 15 chapters adequately introduces a topic and develops a discussion on either their model approach or analytical methodology. Therefore, this volume is an excellent addition to the Surfactant Science Series.

Keith Strevett, *University of Oklahoma*

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Field Responsive Polymers. Electroresponsive, Photoresponsive, and Responsive Polymers in Chemistry and Biology. ACS Symposium Series 726. Edited by Ishrat M. Khan (Clark Atlanta University) and Joycelyn S. Harrison (National Aeronautics and Space Administration). American Chemical Society: Washington, DC (Distributed by Oxford University Press). 1999. xiv + 360 pp. \$120.00. ISBN 0-8412-3598-8.

This book is comprised of 22 papers on "smart polymers" written by experts in the field. A smart polymer is characterized as being "one that responds to an external stimulus in a controlled, reproducible, and reversible manner". Such responsive polymers have many applications in diverse areas of research, including biology, telecommunications, and electronics. The various contributions in this book describe state-of-the-art research in these types of polymers and forecast future directions and applications in the field. Its chapters are organized under the following subheadings: Electroresponsive Polymers; Photoresponsive Polymers; Nonlinear Optical and Photorefractive; and Responsive Polymers in Chemistry and Biology. This volume should be of value to a wide range of scientists and engineers, although the references in it do not extend beyond 1997.

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Houben-Weyl: Methods of Organic Chemistry. Additional and Supplementary Volumes to the 4th Edition. Volume E 23c/Part 2. Substance Index. Aliphatic Compounds I. Carbonyl Compounds II. George Thieme Verlag: Stuttgart, New York. 2000. viii + 1220 pp. DM 3000 (series subscription price DM 2970). ISBN 3-13-12514-3.

This volume of the general index E 23 lists all compounds cited in the Houben-Weyl volumes E 1-E 21 that contain a dihetero-substituted carbon atom (derivatives of ketenes, ketones, and aldehydes.)

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