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BOOK REVIEWS

Thermodynamic Data, Models and Phase Diagrams in Multicomponent Oxide Systems: An Assessment for Materials and Planetary Scientists Based on Calorimetric, Volumetric and Phase Equilibrium Data. By Olga B. Fabrichnaya (Max-Planck-Institut für Metallforschung, Stuttgart), Pascal Richet (Institute de Physique du Globe de Paris), Surendra K. Saxena (Florida International University), and Edgar F. Westrum, Jr. (University of Michigan). Springer-Verlag: Berlin, Heidelberg, New York. 2004. xxiv + 198 pp. $129.00. ISBN: 3-540-14018-2.

This book covers the "application of the Calphad method for derivation of a self-consistent thermodynamic database for the geologically important system MgO-FeO-Fe_2O_3-Al_2O_3-SiO_2 at pressures and temperatures of Earth's upper mantle and the transition zone of that mantle for Earth", to quote from the preface. There are five chapters entitled (1) Thermodynamics and Modeling, (2) Experimental Phase Equilibrium Data, (3) Thermodynamic Data for Stoichiometric Phases and End-members of Solid Solutions, (4) Solid Solution Models and Data, and (5) Calculation of Phase Diagrams. A reference section, a subject and substance index, and a glossary complete the book.

JA040932T

10.1021/ja040932t

Inorganic Syntheses, Volume 34. Edited by John R. Shapley (University of Illinois, Urbana-Champaign). John Wiley & Sons, Inc.: Hoboken, NJ. 2004. xxii + 260 pp. $94.95. ISBN: 0-471-64750-0.

The present volume of *Inorganic Syntheses* contains five chapters that, in the words of the editor, "reflect the diversity of inorganic synthetic activities in modern research". Chapters are organized in order of increasing synthetic complexity, beginning with main group compounds, organometallic and coordination complexes, transition-metal carbonyl compounds, cyanide compounds, and closing with cluster and polynuclear compounds. Contributor, subject, and formula indices complete the book.

JA040944E

10.1021/ja040944e

The Chemistry of 1,2,3-Thiadiazoles. The Chemistry of Heterocyclic Compounds, Volume 62. By Vasiliy A. Bakulev (The Urals State Technical University) and Wim Dehaen (University of Leuven). John Wiley & Sons, Inc.: Hoboken, NJ. 2004. xviii + 242 pp. $325.00. ISBN: 0-471-32662-3.

The goal of this book is to provide a comprehensive treatment of the chemistry of 1,2,3-thiadiazoles with an emphasis on their "syntheses, structural data, properties, reactions and applications", to quote from the preface. The book also contains references current through 2002 and a subject index.

JA040943M

10.1021/ja040943m

Synthesis of Carbohydrates through Biotechnology. Edited by Peng George Wang (Wayne State University) and Yoshi Ichikawa (Optimer Pharmaceuticals, Inc.). American Chemical Society (Distributed by Oxford University Press): Washington, DC. 2004. xii + 196 pp. $115.00. ISBN: 0-8412-3865-0.

This book is based upon the presentations given at a symposium of the same name held during the 224th meeting of the American Chemical Society in Boston in 2002. The stated aim of the book is to introduce "current results and state-of-the-art methods in carbohydrate synthesis and production." A sampling of the chapters includes "Approaches to the Enzymatic Carbohydrate Synthesis", "Probing the Antigenic Diversity of Sugar Chains", and "Synthesis of Glycoconjugates through Biosynthesis Pathway Engineering". An author and a subject index complete the book.

JA0409311

10.1021/ja0409311

Electroanalytical Chemistry: A Series of Advances, Volume 22. Edited by Allen J. Bard (University of Texas at Austin) and Israel Rubinstein (Weizmann Institute of Science). Marcel Dekker, Inc.: New York, Basel. 2003. xx + 310 pp. $199.00. ISBN: 0-8247-4719-4.

All three chapters of Volume 22 of this series are well-written, well-referenced, and provide timely and expansive descriptions of the subject matter at hand. Because the topics covered are quite different, this volume should appeal to a large and diverse readership.

The first chapter is titled "Looking at the Metal/Solution Interface with the Electrochemical Quartz Crystal Microbalance: Theory and Experiment" by Tsionsky, Daikhin, Urbakh, and Gileadi. Although applications of the electrochemical quartz crystal microbalance (EQCM) were covered in 1991 by Buttry in Volume 17 of this series, this contribution by Gileadi et al. provides a welcome update concerning advances that have occurred since then. At least 120 of the 178 references refer to work published after the 1991 review. This chapter should be valuable to individuals actively pursuing EQCM research, as well as to those with a more peripheral interest and/or those wishing to initiate themselves to the subject matter.

Unsigned book reviews are by the Book Review Editor.

In Chapter 2, titled "The Indirect Laser-Induced Temperature[ILIT]-Jump Method for Characterizing Fast Interfacial Electron Transfer: Concept, Application, and Results", authors Feldberg, Newton, and Smalley manage to make a difficult topic tractable to nonspecialists. Much of this chapter is written in first person, which gave this reviewer a sense of having the material taught to him personally. It is questionable whether ILIT methods will ever enjoy the widespread utility demonstrated by other electrochemical techniques; however, it is important to note that their impact is not in the realm of ordinary analysis but rather in the realm of extraordinary analysis, more specifically, the characterization of extremely rapid electron-transfer events at interfaces. The authors have done a commendable job of documenting the evolution of the technique, describing the fundamentals on which it is based, and providing important examples of how the technique has been (and could be) used to characterize very fast, i.e., on a nanosecond time scale, interfacial events at macroscopic electrodes.

The third and final chapter is titled "Electrically Conducting Diamond Thin Films: Advanced Electrode Materials for Electrochemical Technologies" by Swain. The first 37 pages are devoted largely to the preparation and characterization of diamond thin films with various properties. Much of the information in these first pages does not specifically concern electroanalytical chemistry, but rather is information that is vital if one ultimately wishes to know the structure and understand the function of these materials in order to perform electroanalytical chemical studies with them. Swain devotes 19 pages to specific electroanalytical applications involving trace metal analysis, bioelectrochemistry, and small molecule detection. Eleven additional pages are devoted to optically transparent electrodes for spectroelectrochemistry, and approximately 20 pages are focused on other electrochemical technologies, including an important discussion concerning the utility of using thin diamond films as supports for advanced electrocatalysts.

In short, Volume 22 of *Electroanalytical Chemistry* provides authoritative overviews of three timely electrochemical topics that should be relevant to analytical chemists with greatly differing research interests. Given the power of modern electronic search engines, it is true that Volume 22 will no longer contain the most up-to-date literature references by the time it actually reaches college or personal libraries; however, one might be wary that an electronic literature search may induce a perspective of the scientific literature that is devoid of the context and insight provided by experts such as those who have contributed to this excellent volume.

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