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BOOK REVIEWS

Aerosol Measurement: Principles, Techniques, and Applications. Second Edition. Edited by Paul A. Baron (National Institute for Occupational Safety and Health) and Klaus Willeke (University of Cincinnati). Wiley-Interscience: New York. 2001. xxiv + 1132 pp. $195.00. ISBN: 0-471-35636-0.

The aim of this book is to guide scientists and practitioners in the use of modern aerosol measurements and how to interpret their results. The first of its three parts presents the fundamentals of aerosol science measurement, whereas the second offers details on specific instrumental techniques. Part III describes applications of aerosol measurement in fields ranging from industrial hygiene to aerosol management in mines. All of the chapters have been updated since the first edition, and two new chapters, one on the history of aerosol measurements and another on real-time single-particle analysis, have been added.

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Fire and Polymers: Materials and Solutions for Hazard Prevention. Edited by Gordon L. Nelson (Florida Institute of Technology) and Charles A. Wilkie (Marquette University). American Chemical Society: Washington, DC (Distributed by Oxford University Press). 2001. xii + 412 pp. $140.00. ISBN: 0-8412-3764-6.

This book, derived from a symposium at the Washington, DC ACS meeting of August 2000, covers the topic of fire and polymers, with particular emphasis on "nonhalogen approaches to flame retardancy, including additives and intrinsically fire-retardant polymers (fire-smart polymers)". Its 28 chapters are organized under the following sections: Nanocomposites, Fire Smart Polymers, Polyurethanes, Non-Halogen Fire Retardants, Halogen, and Assessment and Performance. An author and a subject index complete the book.

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Synthesis and Chemistry of Agrochemicals VI. Edited by Don R. Baker (Consultant, Orinda, CA), Joseph G. Fenyes (Buckman Labs International, Inc., Memphis, Tennessee), George P. Lahm, Thomas P. Selby, and Thomas M. Stevenson (DuPont , Newark, Delaware). American Chemical Society: Washington, DC (Distributed by Oxford University Press). 2002. xii + 364 pp. $135.00. ISBN: 0-8412-3783-2.

This book covers current trends in the synthesis and chemistry of new agrochemical agents. Its 30 chapters, drawn from ACS symposia that occurred during the period 1997−2000, are organized into the following sections: Herbicides in Agriculture; Control of Insects and Acrids in Agriculture, Part A: Discovery of Indoxacarb; Control of Insects and Acrids in Agriculture, Part B; and Control of Fungal Diseases in Agriculture.

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Applications of Inorganic Mass Spectrometry. By John R. DeLaeter (Curtin University of Technology, Perth, Western Australia). Wiley-Interscience: New York. 2001. xx + 474 pp. $99.95. ISBN: 0-471-34539-3.

This volume, part of the Wiley-Interscience series on mass spectrometry, was in many ways a very enjoyable read, but this was in part due to my interest in the history of science and technology. The back cover suggests that the historical introduction to the technology would be followed by an up-to-date description of the applications, but the first section actually had a higher ratio of recent references than the latter. The organization of the monograph was also confusing, because in some cases, the instrumentation was described in the first section and in others, in the second. Even more problematic, some instrumentation appears in both sections but with a different version in each. The book is generally error-free, although in one figure, a component that is obviously an electron multiplier is labeled SEM (presumably for secondary ion electron multiplier) but is described as a scanning electron micrograph.

The focus of the historical introduction to instrumentation is primarily on research instruments built in various specialty labs rather than on commercial instruments to which the vast bulk of the users of this book would be exposed. This detracts from the book's utility for someone wishing to learn and apply the methodologies of inorganic mass spectrometry. Such users would not have access to these kinds of home-built special-purpose equipment unless they were working in such specialized laboratories. In reality, they have a problem and a budget to purchase the equipment needed to solve it. Alternatively, they have the instrumentation but need to know whether it is appropriate to the need. This community of users would, thus, have been better served if commercially available instrumentation had also been discussed.

There are also problems with the lack of clarity in the description of accelerator mass spectrometry. The chapter on secondary ion mass spectrometry is a combination of discussions of double focusing mass spectrometers (not required for SIMS), ion microprobes (a subspecialized form of the SIMS technique), and FAB (Fast Atom bombardment), but there is no discussion of SIMS per se. Time-of-flight mass analyzers appear in the chapter on ICPMS, although for inorganic systems, they are more likely to be found with various types of laser desorption or ablation sources. The reflectron-type TOF instrument is mentioned in passing, ("one commercial model" is mentioned

Unsigned book reviews are by the Book Review Editor.

as existing, but there are many), but its ability to provide higher resolution for isotope/interference resolution is not covered. When the author gets to the applications, only cursory attention is given to ICPMS systems, which probably account for the vast majority of the commercial "inorganic" systems in the field today. Finally, the index is not complete.

The strength of the book lies in its descriptions of the treatment of data, both quantitative and, more particularly, for determinations of isotope ratios. There are detailed descriptions of many sources of error and their corrections, although these are not always found in the same section. Isotope fractionation in the inlet system/ionization source is described, but the discussion is not concentrated in one place, which would be most useful for those trying to decide which method would be appropriate. Unfortunately, the same attention is not given to sample preparation or sampling. The literature and this book are full of super-precise lead isotope ratios based on, in some cases, refined lead from smelters at a site and in other cases on lead from individual ore samples, but they ignore the very large variation across the face of the ore body. Data from these different conditions are all used to try to determine the ages of samples or the locations from which a rock came (a discrete sample from a particular location in an ore body) or by archaeologists for determining the location of the source of the lead in potters' glazes, making the determinations subject to error.

The sections on standard reference materials are probably the best in the book; however, the vast majority of the practitioners of the art or science of inorganic mass spectrometry are interested in how to use reference materials rather than how to prepare and analyze them.

A good way to summarize this book would be that it contains some good material, is poorly organized in some cases, and has some obvious omissions.

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Houben-Weyl. Methods in Organic Chemistry. Volume E23p. Synopsis of the Structure of Houben-Weyl II. Additional and Supplementary Volumes to the 4th Edition (E-Series). Managing Editor: H.-G. Padeken (Stuttgart, Germany). Authors: S. A. Boucher (Chichester, U.K.) and H.-G. Padeken. Georg Thieme Verlag: Stuttgart, New York. 2001. x + 1074 pp. 3600 DM. ISBN: 3-13-116714-9.

This volume, together with Volume E23o, serves as a guide to the synthetic methods contained in the 163 volumes of the 4th Edition and Supplement Series. It includes an introduction to the use of Volumes 23o and -p, a chapter on the history of Houben-Weyl, a list of the volumes, and the additional/supplementary volumes to the 4th Edition as well as an overview of the contents of the main and supplementary volumes of the 4th Edition.

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