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BOOK REVIEWS

Hyphenated Techniques in Speciation Analysis. By Joanna Szpunar (CNRS, Pau, France) and Ryszard Lobinski (CNRS, Pau, France and Warsaw University of Technology). Royal Society of Chemistry: Cambridge. 2003. xvi + 220 pp. $219.00. ISBN: 0-85404-545-7.

This book, written by two established researchers in the field who have years of experience in both the development of hyphenated techniques and their application, is composed of mostly short (5−9 pages) chapters, each with references at their end. Principles and fundamentals of several hyphenated techniques are discussed in the first seven chapters, followed by 12 chapters on different applications. The emphasis is clearly on coupling chromatography and electrophoresis separation techniques to inductively coupled plasma mass spectrometry (ICPMS) and electrospray mass spectrometry (ES-MS) or ES tandem mass spectrometry (MS/MS). As a result, the title is somewhat misleading and should have at least specified elemental speciation analysis.

Furthermore, because the focus of the applications is on either specific elements or matrixes, the same principles are presented repeatedly, making the book overly repetitive. For example, the idea that great care should be taken to preserve the analyte speciation not only during sampling and storage of samples but also during the separation of the different species is presented several times. Similarly, the fact that ICPMS provides the most sensitive element-specific detection, whereas ES-MS and ES-MS/MS are required for the identification of unknown compounds, is stated in each chapter. As a result, this book will be most useful to people who are looking for a specific application and will not read the book from cover to cover.

Although the book was intended as an introductory text as well as a critical overview of the research in the field, it succeeded mainly in the latter function, i.e., it would be most useful to analysts already practicing in the area rather than to newcomers. With the exception of ICPMS and ES-MS, techniques are not described in sufficient detail for inexperienced readers to grasp them easily. Important details are missing, such as whether peak height or area should be used for quantitation and the number of measurement points required across each peak to prevent skewing. No distinction is made between species-specific isotope dilution analysis and speciated isotope dilution analysis, two approaches that are different in terms of the number of interference-free isotopes required per element as well as in the equation used to compute the species concentration in the sample. Similarly, different methods are available for the correction of dead time, but only one was mentioned. The authors could also have been more consistent: for instance, they use IUPAC's definition of speciation but not its terminology for the ICP plasma gases. Moreover, the book contains a number of typographical errors that could have readily been found by a spell-checker. It is unfortunate that neither the authors nor the series editor seemed to have taken the time to do this. Finally, the quality of some of the reproduced figures is poor, i.e., they are pale, blurry, or too small.

Nonetheless, despite the criticisms, this book should be a good resource for ICPMS or ES-MS(/MS) practitioners who want to get involved in or have already entered the field of elemental speciation analysis. It provides a critical overview that adequately represents the current state of elemental speciation analysis.

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