

Book reviews

Hazardous Metals in the Environment, M. Stoeppler (Ed.), pp. 542 + x, Elsevier, Amsterdam, 1992. US\$225.50, Dfl395.00. ISBN 0-444-89078-5

This book is volume 12 in the series: Techniques and Instrumentation in Analytical Chemistry. It is divided into two parts. The first part deals with fundamental but often neglected areas, such as sampling, sample storage and sample treatment. Of particular interest is a historical discussion of the metal contents of wine, which constitutes a record of changes in the environmental levels of metals (and other species) which is difficult to obtain elsewhere. There follows a discussion of analytical methods (only a summary, but with references) and speciation.

The second part of the book concerns techniques for specific metals, namely cadmium, lead, mercury, arsenic, thallium, chromium, nickel, cobalt, aluminium, and selenium. There are other "hazardous" metals. Indeed which are not, given the appropriate circumstances? The title of this book is therefore rather unfortunate. Nevertheless, the detail and the contents of this book make it a very valuable contribution, which will be of use to anyone embarking on environmental metal analysis, whether of the elements dealt with specifically, or of others. It also contains a valuable warning. It is becoming clear that "absolute" values of metal or other contents are not easily accessible, even where the greatest care is taken to use the best available personnel and instrumentation. This is discussed in the last chapter of the book, and is an indication that we are far from possessing entirely satisfactory methods despite the sophistication and methodology developed in the last few years.

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Environmental analysis using chromatography interfaced with atomic spectroscopy, R.M. Harrison and S. Rapsomanikis (Eds.), Ellis Horwood Ltd., Chichester, 1989, pp. 364. ISBN 0-85312-979-7

This is a useful book. Analytical chemistry has achieved a new prominence with the interest in environmental problems and the demands which it places on methods of determining human-generated materials when widely dispersed. The book is a primer of chromatographic and atomic spectroscopic techniques, beginning with a discussion of principles, then of detectors, and finally interfaces. Specific discussion is then devoted to tin and germanium, lead, arsenic and antimony, mercury, selenium, and sulfur compounds. Each of these chapters gives some information on speciation and pathways for the particular elements in the environment.

Some of the elements such as lead and mercury form organometallic compounds of environmental significance. However, there are many more trace elements to be analysed than are dealt with here, not to mention organic species, *etc.* The book does not discuss sampling and statistics. It is rather a description of a set of analytical techniques together with some of their applications in a specific area. On that basis, it will be very useful to anyone setting out to do this kind of analysis.

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Introduction to cluster chemistry, D.M.P. Mingos and D.J. Wales, Prentice Hall International, Englewood Cliffs, 1990, pp. 318. £19.95. ISBN 0-13-474305-9

This is the first in a new series designed to provide high quality books on frontier topics in inorganic and organometallic chemistry, written by well-established leaders in these fields. The present volume covers virtually all aspects of cluster chemistry, including transition metal, Main Group and *f*-element clusters, as well as a brief discussion of 'naked' clusters generated by molecular beam techniques. The book also provides a solid theoretical basis for understanding cluster structure, bonding and reactivity. The framework for most of the discussions of the theoretical aspects of the subject is Stone's tensor harmonic theory (TSH); whilst the latter may sound somewhat daunting to the uninitiated (including this reviewer!), the concepts and applications of TSH are clearly and concisely explained and require only a knowledge of elementary group theory to fully appreciate them. A nice addition to the text is the provision of what the authors term 'Information Boxes', which summarize particular synthetic approaches, concepts, and spectroscopic properties of cluster compounds, together with the appropriate references. At the conclusion of each chapter is a contemporary selection of study problems and a comprehensive list of references, with coverage through 1989.

Overall, this is an excellent, reasonably priced volume which will be invaluable to workers in the field, and one which is also eminently suitable for advanced undergraduate studies.

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