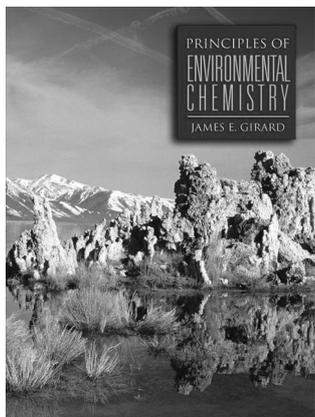


Bill Maher*



Principles of Environmental Chemistry

by James E. Gurrard
Jones & Bartlett,
Sudbury, MA
2005, 677 pp
ISBN 0-7637-2471-8
Hardcover, US\$92

Principles of Environmental Chemistry tries to cover important environmental processes in earth, water, and the atmosphere as well as covering appropriate measurement techniques to measure the pollutants covered. This book focusses on USA EPA regulations and pollutants and is directed towards an American audience; its relevance to non-USA readers is thus diminished.

Gurrard's selection of topics is curious and coverage of topics uneven, with little on the cycling of trace metals or pesticides but whole chapters devoted to nuclear power, asbestos, and the disposal of dangerous wastes. These topics are of obvious importance but I feel it would have been better to concentrate on fewer topics with greater in-depth coverage.

As such, the book provides information of a descriptive nature on a broad range of topics but too little to gain a comprehensive understanding of any process. For example, nitrogen was partially illustrated in several chapters (earth, soil, and air) but its role in water and eutrophication is not covered at all. Overall, important processes, including the role of bacteria in nitrogen cycling, are not covered in any depth. The chapter on inorganic metals is facile; it devotes about a half a page to metal bioaccumulation and effects and 16 pages to metal measurement techniques. The reader would come away with no information on the cycling of trace metals in the environment and processes involved.

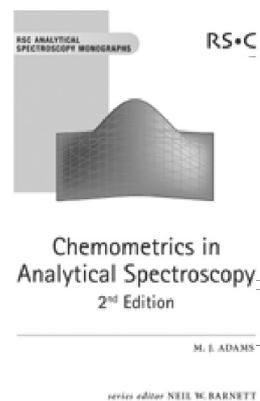
Similarly, the analytical methods given could be found in any basic analytical chemistry textbook and the book provides only a cursory description of techniques. For example, in the chapter on inorganic metals in the environment, atomic spectroscopy (flame and flameless, and hydride generation), X-ray fluorescence, and ICP-OES are very briefly covered, but ICP-MS is not, but all in insufficient detail to decide the merits and limitations of each technique.

What I did like about the book was its illustrations. They were both comprehensive and informative, and it is a pity the text didn't support the figures.

In summary, this book tries to cover too many topics and only succeeds in giving an unsatisfactory coverage of most topics. It provides some useful information (the diagrams are very good) but I doubt it would be useful as a text for teaching process environmental chemistry.

*Bill Maher is professor of environmental/analytical chemistry and director of the Ecochemistry Laboratory at the University of Canberra. His research interests include the biogeochemical cycling of trace elements in aquatic systems and developing procedures to measure such contaminants.

Annette Nolan*



Chemometrics in Analytical Spectroscopy

By M. J. Adams
RSC, Cambridge
2004, 224 pp
ISBN 0-85404-595-3
Hardcover, £100

This text provides a valuable and informative description of the use of fundamental chemometric techniques in modern instrumental spectroscopic analysis. The book aims to provide students and practicing analysts with an introduction and guide to the application of chemometrics in the processing and interpretation of analytical data. It attempts to dispel the 'black-box' attitude towards much of the software currently supplied by instrument manufacturers. While many analysts have an intuitive sense for the workings of data manipulation and analysis software, this book allows the reader to explore and further investigate the fundamental principles involved.

This is a very good introductory text that covers the relevant topics in chemometric techniques focussed on analytical spectroscopy with a tutorial approach and the use of numerous worked examples. The level to which the topics are covered is appropriate for the intended audience of students, post-graduates, and analysts with limited specialist background. The book is well structured and describes the key concepts (from simple descriptive statistics to the more sophisticated techniques of principal components analysis and partial least-squares regression) in a succinct and readable manner, despite the large amount of mathematical detail included. The numerous tables and figures of data included with the worked examples provide effective support for the various topics. I found the chapter on feature selection and extraction particularly interesting, and the chapter on calibration and regression analysis is also very useful. This text would be a valuable reference for any scientist working in analytical spectroscopy with an interest in data analysis and processing. It would also be a very useful text for undergraduate analytical chemistry courses.

*Annette Nolan is a research scientist at the Australian National Measurement Institute, Sydney. Her research interests include metal speciation and analytical techniques and trace element biogeochemistry.