

Enzo Lombi*



Hyphenated Techniques in Speciation Analysis

Edited by J. Szpunar
and R. Łobiński
RSC, Cambridge
2004, 220 pp
ISBN 0-85404-545-7
Hardcover, £80

Speciation of chemicals refers to the analytical pursuit aimed towards assessing the chemical species of elements in various systems. In the last few decades, speciation has gained increasing attention due to the observation that the behaviour, activity, and fate of chemicals are strongly dependent on their chemical speciation. For instance, assessment of the potential toxicity or bioaccumulation of metals by ecotoxicologists has increasingly used information on metal speciation to refine biological and biochemical toxicity models. An ever-increasing number of techniques have been developed to investigate speciation in both solution and solid phases. As a consequence, the literature concerned with speciation analyses has increased exponentially in recent years. Szpunar and Łobiński's book provides a very valuable compendium of information regarding the principles and uses of hyphenated techniques in speciation analyses.

The book is divided in two parts, with part one devoted to the principles and fundamentals of hyphenated techniques and part two describing selected applications. The first chapter in part one contains extremely useful and

clear information and definitions regarding elemental speciation and the various hyphenated techniques. The second chapter describes element-specific detectors, and chapters 3 to 6 describe the principles, advantages, limitations, and areas of application of various hyphenated techniques (i.e. GC-ICP-MS, HPLC-ICP-MS, LC-ICP-MS, CZE-ICP-MS, ES-MS/MS). The last chapter in this section reviews quality control and assurance in speciation analyses. The subjects chosen in the second part of the book cover various applications of hyphenated techniques for the speciation of elements in environmental samples, biological materials, and pharmacology.

The graphical schematic representations of the hyphenated techniques throughout the book are excellent and greatly help the reader. The consistent structure of the different chapters and a good subject index make the reading easier and are of great help in finding specific subjects.

Due to the large variety of speciation techniques available and their countless applications, it is practically impossible to provide in a book an in-depth review of the state-of-the-art on hyphenated techniques. However, the authors, who have previously published a number of journal reviews on the subject, successfully summarize the principles, limitations, and applications of the most commonly used techniques in a clear and easy to follow manner. A sufficient number of references are available at the end of each chapter for further reading. I recommend this book to students and researchers who want to enter the challenging and fascinating field of chemical speciation using hyphenated techniques.

**Enzo Lombi is a Senior Research Scientist and Principal Investigator in the Environmental Contaminants Directorate, CSIRO Land and Water, Adelaide, Australia. His main research topic relates to the biogeochemistry and ecotoxicity of trace elements and the soil chemistry of plant nutrients. He has also an interest in plant physiology in relation to uptake and detoxification of heavy metals.*