Book Review

Handbook of Inductively Coupled Plasma Mass Spectrometry

by K. E. Jarvis, A. L. Gray, R. S. Houk (Additional Chapters by I. Jarvis and J. W. McLaren)

Blackie, Chapman and Hall, New York, 1992. pp xi + 380.
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This volume is mainly aimed at new users of ICP-MS who require a grounding in the technique and some practical advice, and is therefore presented at fairly basic and practical level. Nevertheless there is, in Chapters 1 and 2, a very useful history of the development of ICP-MS and descriptions of the basic principles. Chapter 2 is a particularly valuable discussion of the principles and instrumental aspects covering the ICP source characteristics, the ICP-MS interface and the physical effects at the interface as well as a simple description of mass spectrometers used including a brief but worthwhile discussion of types of vacuum pumps employed.

Chapter 3 is entitled Instrument Options which I expected to be about different manufacturers products and alternative ways of using them, but in fact it is predominantly about nebulisation systems for sample introduction with a few pages concerned with different types of torches and skimmer interface cones. Apart from the latter subject this Chapter is, not surprisingly, like any chapter or review of sample introduction for ICP sources, whether for atomic emission or mass spectrometry. Chapter 3 sits uneasily in the book since Chapter 4 is concerned with sample introduction for liquids and gases. Perhaps these two could have been carefully combined. Chapter 4 covers, unexpectedly, techniques such as electrothermal vaporisation and chemical vaporisation techniques together with calibration strategies for their use with ICP-MS.

Liquid chromatography – ICP-MS as a liquid technique is also discussed in this Chapter and a Summary of LC-ICP-MS studies is given in a table of the form which is particularly useful in that relatively complex information about analytical procedures is easily transmitted to the reader. This approach could have been adopted with great benefit in later chapters concerned with analysis applications (Chapters 8, 9 and 10) which cover elemental analysis, analysis of natural waters and analysis of solids.

Chapter 5 and 6 cover interferences, calibration and data handling respectively and these chapters are possibly the most important for the practising ICP-mass spectrometrists. Early illusions which one might have had about an interference-free technique are quickly evaporated. Both spectroscopic, e.g. isotonic, polyatomic, adduct ions and refractory oxide ion effects; and chemical or matrix interferences are dealt with in depth with reference to the literature. Calibration strategies including external standard, internal standard and isotope dilution methods are covered briefly but adequately.

Chapter 7 written by I. Jarvis, is an excellent discourse on sample introduction, and sample preparation for ICP-MS. Here Jarvis has linked sample preparation procedures with interference problems which might arise from these procedures. Clearly the key to chemical analysis relating to origins of reference materials, data concerning isotope abundancies and a glossary of terms plus an extensive bibliography complete this well rounded text.

Overall the book is easily readable and offers and excellent summary of the state-of-the-art in this relatively new area of chemical analysis. It is a must for anybody working in the field and a "useful to have" for any analytical chemist.

R. D. Snook

Erratum

K. S. Reddy / E. sz. Kováts

Pair-Wise Interactions by Gas Chromatography. Part II: Sociation Free Enthalpies of Some Hydrogen Bonding Solutes with Non-Associated Primary Alcohol Groups

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Figure 1 of this article (on page 250) was erroneously printed upside-down. The figure is reproduced here in the correct form.

Figure 1

Structure of the branched standard paraffin, A, with $X = CH_2-CH_3$, and that of its isosteric derivative, POH, with a primary alcohol group, $X = CH_2-OH$.