BOOK REVIEW

Inductively Coupled Plasmas in Analytical Atomic Spectrometry
2nd Ed., Akbar Montaser and D.W. Golightly, eds., VCH Publishers, New York, 1017 pp., $195, 1992.

The number of applications for inductively coupled plasma (ICP) optical emission spectrometry (OES) and mass spectrometry (MS) has continued to grow in the past five years. Much progress has also been made in understanding the fundamental processes controlling ICP signals.

This edition, following the first edition published in 1987 (reviewed in *Spectroscopy* 4[9], 43 [1989]), updates, improves, and expands the coverage provided in that highly recommended first edition. As previously, the book includes clearly written chapters on basic concepts. Contributions from 32 authors cover atomic emission spectrometry; spectrometers; generators and torches; sample introduction systems; analytical performance of ICP-OES; spectral interferences and line selection in ICP-OES; high-resolution spectrometry; fundamental properties of ICPs; introduction of gases, liquids, and solids; low-flow torches; and ICPs in gases other than Ar.

The most important change in this second edition is the far more extensive coverage of ICP-MS. The first chapter on ICP-MS, by Gary Horlick and Youbin Shao, has been updated and rewritten. It serves as an introduction to ICP-MS with discussion about instrumentation, how experimental parameters affect analyte signals, spectral overlaps, and an assessment of matrix effects. Two new chapters have been added. "Fundamental Aspects of Inductively Coupled Plasma–Mass Spectrometry," by Donald J. Douglas, provides an excellent overview of the fundamental processes that affect ICP-MS signals, particularly the sampling of ions from the plasma to the mass spectrometer. "Analytical Applications of Inductively Coupled Plasma–Mass Spectrometry," by Howard E. Taylor and John R. Garbarino, briefly describes applications, particularly those uniquely addressed by ICP-MS rather than ICP-OES.

"Analytical Applications of ICP as an Atomization Cell for Atomic Fluorescence Spectrometry," by Donald Demers and Akbar Montaser, replaces a chapter in the previous edition on atomic fluorescence spectrometry with ICPs. The new chapter is more applied in nature.

Two other chapters new to this edition focus on fundamental studies of ICPs. "Spectroscopic Reference Data," by Wolfgang L. Weise, describes the current state of knowledge of atomic transition probabilities and sources of compilations of the most current reference data. "Mathematical Modeling of the Inductively Coupled Plasmas," by Javad Mostaghimi and Maher Boulos, reviews models that are useful for torch design and simulation of plasmas, including mixed-gas ICPs.

If readers could have only one book on ICP spectrometry, this should be it. The authors and editors have succeeded in improving upon the excellence of the first edition. Everyone involved in elemental analysis using ICPs, both novices and experts alike, should have this book. References and bibliographies for each topic provide titles as well as sources and dates. Therefore, the book can serve both as a stand-alone source of information on ICP-OES and ICP-MS or as an excellent guide to more detailed literature.

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