

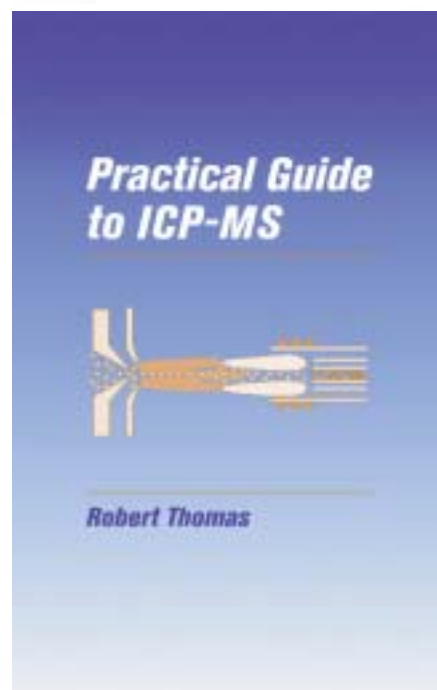
Book Review

Review of *Practical Guide to ICP-MS* by Robert Thomas (Marcel Dekker, 2004)

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It is surprising that only a few books are available on inductively coupled plasma mass spectrometry (ICP-MS), in spite of the fact that more than 5000 ICP-MS systems are in use today. These books, along with the literally thousands of articles published in the scientific literature, contain a wealth of information, but inexperienced ICP-MS users previously did not have a ready source of basic information clearly explaining the technique from sample to signal processing. Any new user of ICP-MS or anyone contemplating entering the field will find the *Practical Guide to ICP-MS* an essential first step. This book demystifies ICP-MS and shows readers just how accessible a technique it really is.

The *Practical Guide to ICP-MS* is the book form of a series of articles that appeared recently in *Spectroscopy* (1–14). The original articles have been revised and new material added to complete the book. The book is divided into 21 chapters starting with a general overview of ICP-MS and the principles of ion formation. Intermediate chapters take the reader on the same journey an ion would take through an ICP-MS system. Each part of the system is explained, describing details of both its construction and function. Separate chapters are devoted to sample introduction techniques, the plasma source, and the critical interface region where ions are sampled at one atmosphere from the plasma itself and enter the mass spectrometer region operating at pressures of less than 10^{-6} torr. From there, ion focusing techniques are covered and subsequent chapters devoted



to each type of MS system available. These include quadrupole, double-focusing magnetic sector, and time-of-flight (TOF) mass spectrometers. Important new developments on the use of collision and reaction cell technology for the elimination of polyatomic interferences are presented as well.

The remaining chapters cover topics such as peak measurement protocols, methods of quantitation, interferences, contamination issues, alternate sampling accessories and applications. Chapter 19 compares the performance of ICP-MS with other atomic spectrometry techniques and serves as a prelude to a chapter that covers the considerations affecting the selection of an ICP-MS system for your laboratory. In this chapter, the author addresses the challenge facing

anyone tasked with the purchase of an ICP-MS system. Advice is offered to the prospective buyer beginning with how to define the analytical performance required, usability aspects, and reliability issues, as well as financial considerations. Specific examples and tests are suggested for evaluating analytical performance, including detection capability, precision/signal stability, accuracy, dynamic range, and interference reduction. The final chapter lists contact information for several ICP-MS system manufacturers, as well as ancillary equipment suppliers, relevant conferences, and Web sites and list servers to consult.

The *Practical Guide to ICP-MS* is written clearly and is well organized. While it provides an ample number of tables and illustrations, the printing quality of some of the illustrations is relatively poor, but this does not detract from the overall impact and value of the book.

As a practitioner of ICP-MS for more than 20 years, I highly recommend this book as a primer to students, new users, laboratory managers, and users of ICP-MS data. The price of the book is well worth investing for Chapter 20 alone, which deals with the selection criteria for instrument purchase. More-experienced users and teachers will find that this book is a useful source of information on the current state of ICP-MS and its place in analytical atomic spectrometry.

The *Practical Guide to ICP-MS* contains a foreword by Ramon Barnes (University of Massachusetts, Amherst) and is available from Marcel Dekker Inc. (www.dekker.com).

References

1. *Spectroscopy* **16**(4), 38–42 (2001).
2. *Spectroscopy* **16**(5), 56–60 (2001).
3. *Spectroscopy* **16**(6), 26–30 (2001).
4. *Spectroscopy* **16**(7), 26–34 (2001).
5. *Spectroscopy* **16**(9), 38–44 (2001).
6. *Spectroscopy* **16**(10), 44–48 (2001).
7. *Spectroscopy* **16**(11), 22–27 (2001).
8. *Spectroscopy* **17**(1), 36–41 (2002).
9. *Spectroscopy* **17**(2), 42–48 (2002).
10. *Spectroscopy* **17**(4), 34–39 (2002).
11. *Spectroscopy* **17**(7), 28–35 (2002).
12. *Spectroscopy* **17**(10), 24–31 (2002).
13. *Spectroscopy* **17**(11), 26–33 (2002).
14. *Spectroscopy* **18**(2), 42–54 (2003). ■