

Book review

Tales of Mystery and Imagination

Mass Spectrometry—A Textbook; Jürgen H. Gross, Springer, Berlin/Heidelberg, 2004, 518 pages, ISBN 3-540-40739-1

Reading was fun right from the beginning, when I saw the Preface of the new “Mass Spectrometry” textbook by Jürgen Gross: “When non-mass spectrometrists are talking about mass spectrometry it rather often sounds as if they were telling a story out of Poe’s *Tales of Mystery and Imagination*.” This is an experience all mass spectrometrists likely have made and something needs to be done about this in view of the quickly growing potential of mass spectrometry. Consequently, it is highly appreciated that Jürgen Gross undertook the adventure to write a new textbook about mass spectrometry, which is the exact opposite of tales of mystery and imagination. It is amazing, how much detailed information he is able to pack into compact chapters without oversimplifying or losing precision or clarity. Although the beginner in mass spectrometry will probably not catch all the details of what is discussed, it is this high density of information which makes the book even an excellent compilation for the expert of the facts and the theories behind them.

The book is clearly organized into 12 chapters. Most older textbooks first introduce the reader to ion sources and ion generation. It is thus surprising that Gross starts with two chapters on gas-phase ion chemistry and isotopes after an introductory overview. However, this is only consequent from the viewpoint of a chemist to first present the basic concepts that rule the chemistry of ions in the highly diluted gas phase, before discussion the details of instrumentation in Chapter 4. The remaining sections are ordered according to the ionization method starting with electron ionization (EI), after which one finds a comprehensive discussion of typical fragmentations of ions generated by EI and how they contribute to the interpretation of mass spectra. Chemical ionization, field desorption, fast atom bombardment, matrix-assisted laser desorption/ionization, and

electrospray ionization follow, each with its peculiarities, its scope and limitations and the effects it has on instrument design. The last chapter is devoted to the “Hyphenated Methods,” i.e., the coupling of mass spectrometry to chromatography.

The book is excellently illustrated with a large number of straight-to-the-point graphics which help to understand what is discussed in the text. What I like much is the inclusion of those many examples which fill the book with life by contributing the practical details to the more abstract theories. A large number of data is available in numerous tables included in the chapters and in the appendix. Also, each of the chapters ends with an extensive – and I mean extensive – list of well-chosen, modern references for further reading giving an easy entry to the literature. Finally, the table of contents and the index are well organized and make the book easy to maneuver. Needless to say, the author obviously prepared the book with great care.

To sum it up, the book definitively is worth reading for a broad readership from the interested student to the mass spectrometry expert. It is a particularly good investment for Ph.D. students who are just about to start doing mass spectrometry and I will certainly recommend it to my own coworkers. Briefly, the book is one of best textbook on mass spectrometry I have seen so far. It may serve excellently as a basis for teaching lecture courses on mass spectrometry. Hopefully, it will find widespread attention and can then contribute to fight the Tales of Mystery and Imagination, not those of Poe of course, but those about mass spectrometry in the rest of the chemical world.

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