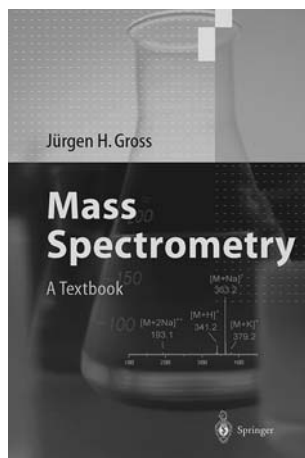


Herbert Budzikiewicz

J.H. Gross: Mass Spectrometry. A Textbook

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Bibliography

Mass Spectrometry.
A Textbook,
J.H. Gross,
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New York,
ISBN: 3-540-40739-1.
Hardcover, 518 pp,
357 illus., 2004, EUR 64,15

niques, MALDI, electrospray), and, in the closing chapter, so-called hyphenated methods (combinations of mass spectrometry with chromatographic methods and tandem mass spectrometry). Each chapter ends with an ample reference list comprising books and review articles and original publications. An appendix contains lists of elements and their isotopic composition, isotope patterns, characteristic fragments observed in electron-ionization spectra, and frequently encountered impurities.

Book's topic and contents Although many books dealing with organic mass spectrometry (the present oeuvre is restricted to this field in a broad sense) have appeared over the years, since Beynon's 1960 classic publication no single author has attempted to compile such a comprehensive treatise. The book comprises twelve chapters including basic principles (quasi-equilibrium theory, energy considerations—for example bond strengths, ionization energies, gas-phase basicities, etc., gas-phase ion chemistry, isotopes), instrumentation (ion separation in time-of-flight, sector-field, quadrupole, ion-trap, and ICR instruments), specifically electron ionization and in detail subsequent fragmentation of organic ions (specific processes, for example α -cleavage or McLafferty rearrangement, are grouped together), alternative ionization techniques (chemical ionization, field ionization and desorption, fast atom bombardment and related tech-

Critical assessment Each chapter offers a detailed discussion with many illustrations facilitating understanding. Reference is always given to the original literature (as recent as 2003, as checks showed). The text is, however, occasionally somewhat verbose. In general the treatment of the various topics is of a thoroughness that it can be used also by advanced users of mass spectrometry for reference and deeper understanding. There are only few exceptions: thus the discussion of chemical ionization is essentially restricted to proton transfer, charge exchange, and electron capture whereas other reagent gases are just mentioned en passant.

Although many practical hints are interspersed in the text, a beginner in the field may be overawed by the wealth of information and ask, "What should I do now?" For example, in the over-detailed discussion of isotopes and accurate mass measurements there is no indication how to approach the list of elemental compositions obtained in daily practice (e.g. the nitrogen rule is discussed only many chapters later without any reference here).

The book is admirably free from errors, printing and others. Rare examples are the amine fragments in the 3rd paragraph on page 238, which are lacking hydrogens, and on page 231 in the box is discussed not *Stevenson's* but rather *Audier's* rule (Stevenson had observed that the fragment with the higher ionization potential is formed with excess energy).

Readership recommendation Jürgen Gross's book should be ready at hand not only on the shelf in every

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mass spectrometry laboratory but also on the desk of all persons otherwise engaged in this field. Mistakes such as buying the wrong instrument, using an inadequate technique for a specific problem, extracting too little or even the wrong information from the data acquired could thus be avoided. Beginners, however, should first study one of the introductory texts and then switch to this book to deepen their understanding.

Summary The book is highly informative and up-to-date covering all aspects of organic mass spectrometry.

It can be used both as a reference book and as a guide for those persons who want more than a superficial knowledge of this important field.

References

Gross JH (2004) Mass Spectrometry. A Textbook. Springer, Berlin Heidelberg New York