DESCRIPTION

In organic mass spectrometry provides established analytical techniques to analyze known and unknown materials in respect to their elemental composition or species, to quantify the elemental concentration of major, minor and trace elements in any samples for the determination of the exact mass of isotopes and precise and accurate isotopic abundances or isotope ratios. Beginning with a historical overview of mass spectrometry, Inorganic Mass Spectrometry: Principles and Applications presents the fundamentals and instrumentation of the most important inorganic mass spectrometric techniques, describes a wide range of analytical methods and a multitude of applications.

This comprehensive work provides an insight into the state of the art of mass spectrometry in different challenging areas and recent developments and presents representative coverage of many topics. It is concerned with the most important types of mass spectrometers and presents an overview of new methodological developments and trends for analytical work and modern applications especially in survey, trace, ultratrace, surface (micro- and nanolocal analysis, imaging and depth profiling) and isotope analysis.

The first part of the book describes fundamentals of inorganic mass spectrometry (basic principles and developments of ion sources, ion separation systems and ion detectors) and instrumental developments in ICP-MS, LA-ICP-MS, GDMS, SIMS, TIMS and other mass spectrometric techniques. The second part focuses on a multitude of quite different applications including:

- Materials science
Environmental Science and environmental control

- Biology

- Bioengineering

- Medicine

- Food analysis

- Geology and geochemistry

- Cosmochemistry, planetary and space science

- Determination of long-lived radionuclides

- Forensic applications

- The study of cluster and polyatomic ion formation by mass spectrometry

Extensive appendices include a table of isotopic abundances, atomic mass and ionization energies of elements; a table of atomic weights of elements; and a list of standard reference materials for isotope ratio measurements.

Inorganic Mass Spectrometry, written by an author with extensive experience in research and teaching provides a balanced mixture of practice-oriented information and theoretical background that will prove useful to both new and established practitioners in this field.
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