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Nota di contenuto	Introduction to Mass Spectrometry; Contents; Preface; Acknowledgments; Chapter 1 Introduction; I. Introduction; 1. The Tools and Data of Mass Spectrometry; 2. The Concept of Mass Spectrometry; II. History; III. Some Important Terminology Used In Mass Spectrometry; 1. Introduction; 2. Ions; 3. Peaks; 4. Resolution and Resolving Power; IV. Applications; 1. Example 1-1: Interpretation of Fragmentation Patterns (Mass Spectra) to Distinguish Positional Isomers; 2. Example 1-2: Drug Overdose: Use of GC/MS to Identify a Drug Metabolite 3. Example 1-3: Verification that the Proper Derivative of the Compound of Interest Has Been Prepared4. Example 1-4: Use of a CI Mass Spectrum to Complement an EI Mass Spectrum; 5. Example 1-5:

Use of Exact Mass Measurements to Identify Analytes According to Elemental Composition; 6. Example 1-6: Is This Protein Phosphorylated? If So, Where?; 7. Example 1-7: Clinical Diagnostic Tests Based on Quantitation of Stable Isotopes by Mass Spectrometry in Lieu of Radioactivity; V. The Need for Chromatography; VI. Closing Remarks; VII. Monographs on Mass Spectrometry Published Before 1970

Chapter 2 The Mass Spectrometer I. Introduction; II. Ion Guides; III. Types of  $m/z$  Analyzers; 1. Time-of-Flight  $m/z$  Analyzers; A. Linear; 1) Resolving Power of the Linear TOF Instrument; 2) Time-Lag Focusing; 3) Beam Deflection; B. Reflectron; C. Orthogonal Acceleration; D. Ion Detection in the TOF Analyzer; 1) Time-Slice Detection; 2) Time-Array Detection; 3) TAD with Transient Recorders; 4) TAD with an Integrating Transient Recorder; 5) Hadamard Transform TOF-MS; 2. Quadrupole Ion Traps; A. 3D Quadrupole Ion Trap; B. Linear Quadrupole Ion Trap (LIT); C. Performance Trade-Offs in the Ion Trap

3. The Orbitrap A. Historical Aspects; B. Operating Principles; 1) Role of the C Trap in Success of the Orbitrap; 2) Figures of Merit for the Orbitrap as an  $m/z$  Analyzer; 4. Transmission Quadrupoles; A. QMF Equations of Motion; B. The Stability Diagram; C. Characteristics of Output; D. Spectral Skewing; E. Performance Limitations; 5. Magnetic-Sector Instruments; A. Single-Focusing Instruments; 1) Operating Principles; 2) Magnetic Versus Scanning; 3) Performance Limitations; B. Double-Focusing Instruments; 6. FTICR-MS; A. Hardware Configuration; B. Operational Considerations

C. Representative Applications

7. Ion Mobility Spectrometry (IMS); A. Operating Principles; B. FAIMS; C. Applications; IV. Calibration of the  $m/z$  Scale; 1. Electron Ionization; 2. Chemical Ionization; 3. Electrospray Ionization and APCI Techniques; 4. MALDI; V. Ion Detectors; 1. General Considerations; 2. Types of Detectors; A. Faraday Cup; B. Electron Multiplier; 1) Discrete-Dynode Version; 2) Continuous-Dynode Version; C. Negative-Ion Detection; D. Post-Acceleration Detection and Detection of High-Mass Ions; E. Channel Electron Multiplier Array (CEMA); F. Electro-Optical Ion Detection

G. The Daly Detector

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### Sommario/riassunto

Completely revised and updated, this text provides an easy-to-read guide to the concept of mass spectrometry and demonstrates its potential and limitations. Written by internationally recognised experts and utilising "real life" examples of analyses and applications, the book presents real cases of qualitative and quantitative applications of mass spectrometry. Unlike other mass spectrometry texts, this comprehensive reference provides systematic descriptions of the various types of mass analysers and ionisation, along with corresponding strategies for interpretation of data. The book conclu

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