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1.15 Inorganic Ionization Sources; 1.15.1 Thermal Ionization Source; 1.15.2 Spark Source; 1.15.3 Glow Discharge Source; 1.15.4 Inductively Coupled Plasma Source; 1.15.5 Practical Considerations; 1.16 Gas-Phase Ion-Molecule Reactions; 1.17 Formation and Fragmentation of Ions: Basic Rules; 1.17.1 Electron Ionization and Photoionization Under Vacuum; 1.17.2 Ionization at Low Pressure or at Atmospheric Pressure; 1.17.3 Proton Transfer; 1.17.4 Adduct Formation; 1.17.5 Formation of Aggregates or Clusters; 1.17.6 Reactions at the Interface between Source and Analyser; 2 Mass Analysers; 2.1 Quadrupole Analysers; 2.1.1 Description; 2.1.2 Equations of Motion; 2.1.3 Ion Guide and Collision Cell; 2.1.4 Spectrometers with Several Quadrupoles in Tandem; 2.2 Ion Trap Analysers; 2.2.1 The 3D Ion Trap; 2.2.2 The 2D Ion Trap; 2.3 The Electrostatic Trap or 'Orbitrap'; 2.4 Time-of-Flight Analysers; 2.4.1 Linear Time-of-Flight Mass Spectrometer; 2.4.2 Delayed Pulsed Extraction; 2.4.3 Reflectrons; 2.4.4 Tandem Mass Spectrometry with Time-of-Flight Analyser; 2.4.5 Orthogonal Acceleration Time-of-Flight Instruments; 2.5 Magnetic and Electromagnetic Analysers; 2.5.1 Action of the Magnetic Field; 2.5.2 Electrostatic Field; 2.5.3 Dispersion and Resolution; 2.5.4 Practical Considerations; 2.5.5 Tandem Mass Spectrometry in Electromagnetic Analysers; 2.6 Ion Cyclotron Resonance and Fourier Transform Mass Spectrometry; 2.6.1 General Principle; 2.6.2 Ion Cyclotron Resonance; 2.6.3 Fourier Transform Mass Spectrometry; 2.6.4 MSⁿ in ICR/FTMS Instruments; 2.7 Hybrid Instruments; 2.7.1 Electromagnetic Analysers Coupled to Quadrupoles or Ion Trap; 2.7.2 Ion Trap Analyser Combined with Time-of-Flight or Ion Cyclotron Resonance

Sommario/riassunto

The latest edition of a highly successful textbook, *Mass Spectrometry, Third Edition* provides students with a complete overview of the principles, theories and key applications of modern mass spectrometry. All instrumental aspects of mass spectrometry are clearly and concisely described: sources, analysers and detectors. Tandem mass spectrometry is introduced early on and then developed in more detail in a later chapter. Emphasis is placed throughout the text on optimal utilisation conditions. Various fragmentation patterns are described together with analytical information that derives
