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Nota di contenuto	Isotopic Analysis: Fundamentals and Applications Using ICP-MS; Contents; Preface; List of Contributors; 1: The Isotopic Composition of the Elements; 1.1: Atomic Structure; 1.2: Isotopes; 1.3: Relation Between Atomic Structure and Natural Abundance of Elements and Isotopes; 1.4: Natural Isotopic Composition of the Elements; 1.4.1: Elements with Radiogenic Nuclides; 1.4.1.1: Radioactive Decay; 1.4.1.2: Elements with Radiogenic Nuclides; 1.4.2: Effects Caused by Now Extinct Radionuclides; 1.4.3: Mass-Dependent Isotope Fractionation; 1.4.3.1: Isotope Fractionation in Physical Processes 1.4.3.2: Isotope Fractionation in Chemical Reactions1.4.4: Mass-Independent Isotope Fractionation; 1.4.5: Interaction of Cosmic Rays with Terrestrial Matter; 1.4.6: Human-Made Variations; References; 2: Single-Collector Inductively Coupled Plasma Mass Spectrometry; 2.1: Mass Spectrometry; 2.2: The Inductively Coupled Plasma Ion Source;

2.3: Basic Operating Principles of Mass Spectrometers; 2.3.1: Mass Spectrometer Characteristics; 2.3.1.1: Mass Resolution; 2.3.1.2: Abundance Sensitivity; 2.3.1.3: Mass Spectral Range; 2.3.1.4: Scanning Speed; 2.3.2: Quadrupole Filter
2.3.3: Double-Focusing Sector Field Mass Spectrometer2.3.4: Time-of-Flight Analyzer; 2.3.5: Comparison of Characteristics; 2.4: Quadrupole-Based ICP-MS; 2.5: Sample Introduction Strategies in ICP-MS; 2.6: Spectral Interferences; 2.6.1: Cool Plasma Conditions; 2.6.2: Multipole Collision/Reaction Cell; 2.6.2.1: Overcoming Spectral Interference via Chemical Resolution; 2.6.2.2: Overcoming Spectral Interference via Collisional Deceleration and Kinetic Energy Discrimination; 2.6.3: High Mass Resolution with Sector Field ICP-MS; 2.7: Measuring Isotope Ratios with Single-Collector ICP-MS
2.7.1: Isotope Ratio Precision2.7.1.1: Poisson Counting Statistics; 2.7.1.2: Isotope Ratio Precision with Single-Collector ICP-MS; 2.7.2: Detector Issues; 2.7.2.1: Electron Multiplier Operating Principles; 2.7.2.2: Detector Dead Time; 2.7.3: Instrumental Mass Discrimination; References; 3: Multi-Collector Inductively Coupled Plasma Mass Spectrometry; 3.1: Introduction; 3.2: Early Multi-Collector Mass Spectrometers; 3.3: Variable Multi-Collector Mass Spectrometers; 3.4: Mass Resolution and Resolving Power; 3.5: Three-Isotope Plots for Measurement Validation
3.6: Detector Technologies for Multi-Collection3.7: Conclusion; References; 4: Advances in Laser Ablation-Multi-Collector Inductively Coupled Plasma Mass Spectrometry; 4.1: Precision of Isotope Ratio Measurements; 4.2: Stable Signal Intensity Profiles: Why So Important?; 4.3: Signal Smoothing Device; 4.4: Multiple Ion Counting; 4.5: Isotope Fractionation During Laser Ablation and Ionization; 4.6: Standardization of the Isotope Ratio Data; Acknowledgments; References
5: Correction of Instrumental Mass Discrimination for Isotope Ratio Determination with Multi-Collector Inductively Coupled Plasma Mass Spectrometry

Sommario/riassunto

Edited by a very well-known and respected scientist in the field, this excellent practical guide is the first to cover the fundamentals and a wide range of applications, as well as showing readers how to efficiently use this increasingly important technique. A must-have guide for newcomers as well as established scientists seeking an overview of ICP-MS.