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Nota di contenuto	Ultrasound in Chemistry; Contents; Preface; List of Contributors; 1 The Power of Ultrasound; 1.1 Introduction; 1.2 Cavitation; 1.2.1 Parameters Affecting Ultrasonic Cavitation; 1.2.1.1 Frequency; 1.2.1.2 Intensity; 1.2.1.3 Solvent; 1.2.1.4 Temperature; 1.2.1.5 External Pressure and Bubbled Gas; 1.2.1.6 Direct and Indirect Ultrasonic Application; 1.3 Common Ultrasonic Devices Used in Analytical Chemistry; 1.3.1 Ultrasonic Bath; 1.3.1.1 Types of Ultrasonic Baths; 1.3.1.2 How to Locate the Most Efcient Place Inside an Ultrasonic Bath; 1.3.1.3 Temperature Control 1.3.1.4 Shape and Material of Reaction Container1.3.2 The Ultrasonic Probe; 1.3.2.1 Parts of an Ultrasonic Probe; 1.3.2.2 Types of Ultrasonic Probes; 1.3.2.3 Dead Zones; 1.3.2.4 How to Choose the Correct Ultrasonic Probe; 1.3.2.5 Temperature Control; 1.3.2.6 Shape and Material of Reaction Container; 1.4 Current Ultrasonic Devices for New Analytical Applications; References; 2 Ultrasonic Energy as a Tool for

Sample Treatment for the Analysis of Elements and Elemental Speciation; 2.1 Introduction; 2.2 Parameters Influencing Element Ultrasonic Solid-Liquid Extraction; 2.2.1 Extracting Reagent 2.2.1.1 Extracting Reagents for Total Element Extraction 2.2.1.2 Extracting Reagents for Elemental Speciation; 2.2.1.3 Extracting Reagents for Sequential Extraction Schemes; 2.2.2 Matrix Properties; 2.2.2.1 Type of Matrix; 2.2.2.2 Mass of Matrix; 2.2.2.3 Sample Size; 2.2.3 Ultrasonic Device; 2.2.3.1 Type of Ultrasonic Device; 2.2.3.2 Time of Ultrasonication; 2.2.3.3 Ultrasonic Amplitude; 2.2.3.4 Ultrasonic Frequency; 2.2.3.5 Temperature of Sonication; 2.3 US-SLE from Soils and Sediments; 2.4 US-SLE from Sewage Sludge; 2.5 US-SLE Extraction from Plants; 2.6 Extraction from Soft Tissues 2.7 Total Element Determination 2.7.1 US-SLE and US-SS for F-AAS; 2.7.2 US-SLE and US-SS for ET-AAS; 2.7.3 US-SLE and US-SS for CV and HG Employed with AAS or AFS; 2.8 Elemental Fractionation and Elemental Speciation; 2.8.1 What is Speciation?; 2.8.2 Shortening Sequential Fractionation Schemes; 2.8.3 Speciation for Soils and Sediments; 2.8.4 Speciation from Plants; 2.8.5 Speciation from Soft Tissues; 2.8.6 Speciation from Other Types of Samples; 2.9 On-Line Applications; 2.9.1 Open and Closed Systems; 2.9.2 UB; 2.9.3 UP; 2.10 Current Trends; 2.10.1 Accelerating Liquid-Liquid Extractions 2.10.2 Chemical Vapor Formation 2.11 Conclusion; References; 3 Ultrasonic Assisted Extraction for the Analysis of Organic Compounds by Chromatographic Techniques; 3.1 Introduction; 3.2 Overview of Classic and Modern Extraction Procedures for Organics; 3.3 Ultrasonic Assisted Extraction (UAE); 3.3.1 Basic Principles; 3.3.2 Parameters Influencing Ultrasonic Assisted Extraction; 3.3.2.1 Amount of Sample; 3.3.2.2 Sample Particle Size; 3.3.2.3 Extraction Solvent; 3.3.2.4 pH of Extracting Solution; 3.3.2.5 Solvent Volume; 3.3.2.6 Sonic Power; 3.3.2.7 Frequency; 3.3.2.8 Extraction Time 3.3.2.9 Extraction Temperature

Sommario/riassunto

This comprehensive reference and handbook covers all aspects of ultrasound for analytical applications. Besides classical extraction techniques, it also provides an overview of ultrasound applications and devotes two chapters to proteomics and polymer technology. From the contents: * Common ultrasonic devices * Elemental speciation * On-line applications * Accelerated extraction of semivolatile and volatile organics * Extracting reagent * The ultrasonic bath vs. the ultrasonic probe * Liquid-liquid extraction * Liquid-solid extraction * Solid-liquid extraction