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2.3.4. Polymer Chips; 2.3.5. Plastic Chips; 2.3.6. Chips and the Polymerase Chain Reaction; 2.4. Surface Modification; 2.4.1. Modification by Polymers; 2.4.2. Modification by Silica Gel; 2.4.3. Modification by Monolithics; 2.4.4. Modification by Sulfonation; 2.5. Designs of Chips; 2.6. Bindings in Chips; 2.7. Conclusion; References; 3 Instrumentation of Nanochromatography and Nanocapillary Electrophoresis; 3.1. Introduction; 3.2. Nanoliquid Chromatography (NLC); 3.2.1. Mobile Phase Reservoirs; 3.2.2. Mobile Phases and Flow Calibration; 3.2.3. Mobile Phase Tubings; 3.2.4. Solvent Delivery Pump; 3.2.5. Sample Injector; 3.2.6. Separation Chips; 3.2.7. Detectors; 3.2.8. Recorder; 3.2.9. Sample Preparation Units; 3.3. Nanocapillary Electrophoresis; 3.3.1. Separation Chip; 3.3.2. Background Electrolyte and Its Reservoirs; 3.3.3. Sample Injection Port; 3.3.4. Detectors; 3.3.5. Recorder; 3.3.6. Sample Preparation Units; 3.4. Conclusion; References; 4 Detection in Nanochromatography and Nanocapillary Electrophoresis; 4.1. Introduction; 4.2. Mass Spectrometer Detectors; 4.3. Fluorescence Detectors; 4.4. Electrochemical Detectors; 4.5. Element Specific Detectors; 4.6. Miscellaneous Detectors; 4.7. Conclusion; References; 5 Sample Preparation in Nanochromatography and Nanocapillary Electrophoresis; 5.1. Introduction; 5.2. Sample Preparation; 5.3. Sampling; 5.3.1. Biological Samples; 5.3.1.1. Blood; 5.3.1.2. Urine; 5.3.1.3. Tissues; 5.3.1.4. Plants; 5.3.1.5. Food Stuffs; 5.3.2. Environmental Samples; 5.3.2.1. Air; 5.3.2.2. Water; 5.3.2.3. Sediment and Soils; 5.4. Preservation; 5.5. Filtration; 5.6. Digestion/Homogenization; 5.7. Extractions; 5.8. Clean Up; 5.9. Preconcentration; 5.10. Off-Line Nanosample Preparation Methods; 5.10.1. Nano Solid Phase Extractions; 5.10.2. Nano Membrane Extractions; 5.10.3. Nano Miscellaneous Extractions; 5.11. Online Nanosample Preparation Methods; 5.12. Conclusion; References; 6 Nano-High Performance Liquid Chromatography; 6.1. Introduction; 6.2. Nano-HPLC; 6.3. Applications; 6.3.1. Nano-HPLC of Biological Matrices; 6.3.1.1. Proteomics; 6.3.1.2. Drugs Development and Design; 6.3.1.3. Environmental Analysis; 6.4. Optimization of Separations in Nano-HPLC; 6.5. Troubleshooting in Nano-HPLC; 6.6. Conclusion; References; 7 Nanocapillary Electrochromatography and Nanomicellar Electrokinetic Chromatography; 7.1. Introduction; 7.2. Nanocapillary Electrochromatography

Sommario/riassunto

Detection of drugs at low concentration is required in a variety of biological and medical situations, in order to avoid harmful side effects posed by some drug residues. The book details the instrumentation, detection, and application of nano chromatography (that is, any chromatographic and capillary electrophoretic method dealing with the detection of a sample at nano gram per liter or lower) and capillary electrophoresis in the analyses of biological and environmental samples. Methods discussed include: Nano Gas Chromatography, Nano Capillary Electrophoresis, Nano Chiral Chromatography, Mic