
Contents

Part I

Analytical Chemistry 1

- 1 In-situ Method for Analyzing the Long-Term Behavior
of Particulate Metal Phases in Soils 3
- 2 Analysis of Toxic Metals by Micro Total Analytical Systems (μ TAS)
with Chemiluminescence 13
- 3 Diffuse Infrared Fourier Transform Spectroscopy
in Environmental Chemistry 19
- 4 Detection of Biomarkers of Pathogenic Bacteria by Matrix-Assisted
Laser Desorption/Ionization Time-of-Flight Mass Spectrometry 31
- 5 Multi-Isotopic Approach (^{15}N , ^{13}C , ^{34}S , ^{18}O and D) for Tracing
Agriculture Contamination in Groundwater 43
- 6 ^2H and ^{18}O Isotopic Study of Ground Waters under a Semi-Arid Climate 57
- 7 $^{13}\text{C}/^{12}\text{C}$ Ratio in Peat Cores: Record of Past Climates 65
- 8 Isotopic Composition of Cd in Terrestrial Materials:
New Insights from a High-Precision, Double Spike Analytical Method 75
- 9 Organic Petrology: A New Tool to Study Contaminants in Soils and Sediments .. 89
- 10 The Comminution of Large Quantities of Wet Sediment for Analysis
and Testing with Application to Dioxin-Contaminated Sediments
from Lake Ontario 99
- 11 Study on the Large Volume Stacking Using the EOF Pump (LVSEP)
for Analysis of EDTA by Capillary Electrophoresis 107

Part II

Toxic Metals 119

- 12 A Framework for Interpretation and Prediction of the Effects of Natural
Organic Matter Heterogeneity on Trace Metal Speciation in Aquatic Systems .. 121
- 13 Binding Toxic Metals to New Calmodulin Peptides 133
- 14 Leaching of Selected Elements from Coal Ash Dumping 145
- 15 Storm-Driven Variability of Particulate Metal Concentrations
in Streams of a Subtropical Watershed 153
- 16 A Model for Predicting Heavy Metal Concentrations in Soils 177
- 17 Phytoremediation of Thallium Contaminated Soils by Brassicaceae 187

18	Mercury Recovery from Soils by Phytoremediation	197
19	Effect of Cadmium and Humic Acids on Metal Accumulation in Plants	205
20	Selection of Microorganisms for Bioremediation of Agricultural Soils Contaminated by Cadmium	215
21	Electrodialytic Remediation of Heavy Metal Polluted Soil	223
22	Electrodialytic Removal of Cu, Cr and As from Treated Wood	235
23	Treatment of Wastewater Contaminated by Mercury by Adsorption on the Crandallite Mineral	243
24	Low Cost Materials for Metal Uptake from Aqueous Solutions	251
25	Removal of Copper(II) and Cadmium(II) from Water Using Roasted Coffee Beans	259

Part III

	Organic Pollutants	267
26	Bioremediation for the Decolorization of Textile Dyes – A Review	269
27	Degradation of the Indigo Carmine Dye by an Anaerobic Mixed Population ...	289
28	Biodegradation of Benzothiazoles by <i>Rhodococcus</i> Bacteria Monitored by ¹ H Nuclear Magnetic Resonance (NMR)	295
29	Biotransformation of Nonylphenol Surfactants in Soils Amended with Contaminated Sewage Sludges	305
30	Quantification of in-situ Trichloroethene Dilution versus Biodegradation Using a Novel Chloride Concentration Technique	317
31	Anthropogenic Organic Contaminants Incorporated into the Non-Extractable Particulate Matter of Riverine Sediments from the Teltow Canal (Berlin) ..	329
32	Behaviour of Dioxin in Pig Adipocytes	353
33	Control of Halogenated By-Products During Surface Water Potabilisation ..	361
34	Organic Pollutants in Airborne Particulates of Algiers City Area	371
35	A Reactive Transport Model for Air Pollutants	383

Part IV

	Polycyclic Aromatic Compounds	391
36	Analysis of High-Molecular-Weight Polycyclic Aromatic Hydrocarbons by Laser Desorption-Ionisation/Time-of-Flight Mass Spectrometry and Liquid Chromatography/Atmospheric Pressure Chemical Ionisation Mass Spectrometry	393
37	Atmospheric Polycyclic Aromatic Hydrocarbons (PAHs) in Two French Alpine Valleys	409
38	Evaluation of the Risk of PAHs and Dioxins Transfer to Humans via the Dairy Ruminant	419
39	Polycyclic Aromatic Hydrocarbons (PAHs) Removal during Anaerobic and Aerobic Sludge Treatments	431
40	Photodegradation of Pyrene on Solid Phase	441
41	Degradation of Polycyclic Aromatic Hydrocarbons in Sewage Sludges by Fenton's Reagent	449

Part V	
Pesticides	461
42 Pesticide Mobility Studied by Nuclear Magnetic Resonance	463
43 Photo- and Biodegradation of Atrazine in the Presence of Soil Constituents	473
44 Behaviour of Imidacloprid in Fields. Toxicity for Honey Bees	483
45 Impact of a Sulfonylureic Herbicide on Growth of Photosynthetic and Non-Photosynthetic Protozoa	495
46 Abiotic Degradation of the Herbicide Rimsulfuron on Minerals and Soil	505
47 Binding of Endocrine Disrupters and Herbicide Metabolites to Soil Humic Substances	517
48 Potential Exposure to Pesticides during Amateur Applications of Home and Garden Products	529
Part VI	
Green Chemistry	539
49 Carbon Dioxide, a Solvent and Synthon for Green Chemistry	541
50 Mechanochemistry: An Old Technology with New Applications to Environmental Issues. Decontamination of Polychlorobiphenyl-Contaminated Soil by High-Energy Milling in the Solid State with Ternary Hydrides	553
51 Development of a Bioreactor for Cometary Biodegradation of Gas-Phase Trichloroethylene	561
52 Enhanced Solubilization of Organic Pollutants through Complexation by Cyclodextrins	569
53 Chemical Samples Recycling: The MDPI Samples Preservation and Exchange Project	585
54 Photodecomposition of Organic Compounds in Aqueous Solution in the Presence of Titania Catalysts	591
55 Depollution of Waters Contaminated by Phenols and Chlorophenols Using Catalytic Hydrogenation	601
56 Treatment of Wastewater Containing Dimethyl Sulfoxide (DMSO)	615
57 Productive Use of Agricultural Residues: Cements Obtained from Rice Hull Ash	621
Part VII	
Ecotoxicology	629
58 Environmental Metal Cation Stress and Oxidative Burst in Plants. A Review	631
59 The LUX-FLUORO Test as a Rapid Bioassay for Environmental Pollutants	645
60 Effects of Two Cyanotoxins, Microcystin-LR and Cylindrospermopsin, on <i>Euglena gracilis</i>	569

61	A New Bioassay for Toxic Chemicals Using Green Paramecia, <i>Paramecium bursaria</i>	673
62	Detection of Toxic Pollution in Waste Water by Short-Term Respirometry	681
63	Environmental Biosensors Using Bioluminescent Bacteria	691
64	Evaluation of Water-Borne Toxicity Using Bioluminescent Bacteria	699
65	Bacteria-Degraders Based Microbial Sensors for the Detection of Surfactants and Organic Pollutants	707
66	Study of Cr(VI) and Cd(II) Ions Toxicity Using the Microtox Bacterial Bioassay	725
67	Cultured Human Cells as Biological Detectors for Assessing Environmental Toxicity	735
68	Genotoxic Impact of Erika Petroleum Fuel on Liver of the Fish <i>Solea solea</i> ..	743
69	Heavy-Metal Resistant Actinomycetes	757
	Index	769