

Index

- Accelerated solvent extraction, 66, 275
Accuracy, 275
Acetic acid, 90, 94, 103
Acid digestion, 19, 89, 275
Adduct formation (reactions), 265
Adducts, 83
Air entrainment, 35
Aliquot, 275
Alkali-earth metals, 25
Alkali metals, 24
Allolobophora chlorotica, 115
Ammonium acetate, 104
Ammonium nitrate, 97
Ammonium pyrrolidine dithiocarbamate,
23, 262
Analyte, 275
Analytical standard, 280
Anions, 24
Anodic stripping voltammetry, 51, 55
APCI, 80, 81
Aporrectodea caliginosa, 124
Aporrectodea icteria, 116
Aporrectodea longa, 111
Aporrectodea rosea, 117
Aporrectodea trapezoides, 117
Aporrectodea tuberculata, 118
Aporrectodea turgida, 118
Aqua regia, 20, 101, 105, 141
Arsenic, 265
Arsine, 31
Atmospheric-pressure chemical ionization,
80, 81
Atom transfer (reactions), 264
Atomic absorption spectroscopy, 25, 54
Atomic emission spectroscopy, 33
Atomization cell, 25, 26, 29, 33
Babington nebulizer, 35
Background correction, 33
BCR, 140
Bile, 194, 197
Bile salts, 194
Bimastos parvus, 112
Bioaccessibility, 193, 227, 235
Bioavailability, 8, 215, 232
Burgener nebulizer, 35
Calcium chloride, 97
Calibration, 275
Calibration curve, 275
Calibration solution, 94
Calibration standard, 280
Cation, 275
Cation-exchange resin, 23
Certified Reference Material, 127, 213,
276

- Charge-coupled device, 39
Charge exchange (reactions), 48, 264
Charge-injection device, 39
Charge-transfer device, 39
Chelating agent, 22
Chelating ion-exchange resin, 24
Chelex-100, 24
Chemical-extraction methods, 124, 178
Chemical ionization (mode), 79
Chemical resolution, 48
Chromium, 266
CI (mode), 79
Cold-vapour (generation), 31, 39
Collision/reaction cell, 41, 46, 48, 264
Colon, 194
Community Bureau of Reference, 140
Complexing agent, 276
Condensation (reactions), 265
Confidence interval, 276
Confidence limit, 276
Contaminated land, 2
Contamination, 276
Continuous-dynode electron multiplier, 43
Continuum source, 33
Control of Substances Hazardous to Health, 241, 276
Co-precipitation, 25, 276
Correlation coefficient, 180
COSHH, 241, 276
Counter electrode, 51
Critical point, 169
Critical values, 13
Cross-flow nebulizer, 35
Crucible, 19, 21
Cyclodextrin, 164
Cyclonic (spray chamber), 37
Czerny–Turner configuration, 32
- Daly detector, 43
Data sheets, 243–252
DB-5, 73
Decomposition, 18
Defecation, 194
Dendrobaena octaedra, 112
Dendrodrilus rubidus, 113
Detection, 25
Detection limit, 10
- Dielectric constant, 147, 272
Diethyldithiocarbamate, 24
Diethylenetriamine pentaacetic acid (DTPA), 90
Differential-pulse anodic stripping voltammetry (DP-ASV), 218, 227
Direct (spray chamber), 37
Direct exposure pathway, 7
Dissolved material, 276
Distribution coefficient, 268
Distribution ratio, 268
Double pass (spray chamber), 37
Doubly charged (polyatomic interferences), 46
Dry ashing, 19, 276
Dry mass, 97, 105
DTPA, 94, 124
Duodenal juice, 197
Duodenum, 194, 196
- Earthworm(s), 107, 176
Allolobophora chlorotica, 115
Aporrectodea caliginosa, 124
Aporrectodea icterica, 116
Aporrectodea longa, 111
Aporrectodea rosea, 117
Aporrectodea trapezoides, 117
Aporrectodea tuberculata, 118
Aporrectodea turgida, 118
Bimastos parvus, 112
Dendrobaena octaedra, 112
Dendrodrilus rubidus, 113
Eisenia foetida, 113, 120, 150
Eiseniella tetraedra, 116
Lumbricus castaneus, 114
Lumbricus festivus, 114
Lumbricus rubellus, 107, 115, 124
Lumbricus terrestris, 115
Octolasion cyaneum, 119
Octolasion tyrtaeum, 119
Sparganophilus eiseni, 120
- EDTA, 93
EDXRF, 50
EI (mode), 79
Eisenia foetida, 113, 120, 150
Eiseniella tetraedra, 116
Electrochemistry, 51

- Electrolytic cell, 51
Electron-capture detector, 74
Electron impact, 79
Electron multiplier (tube), 43, 83
Electrospray (ES) ionization, 80
Electrothermal atomic absorption spectroscopy, 29
Electrothermal vaporization, 37
Energy-dispersive (XRF), 50
Environmental Protection Act (UK), 2, 10
ES (ionization), 80
Ethylenediamine tetraacetic acid (EDTA), 90
Exchangeable fraction, 101
Expansion chamber, 27, 28
Exposure, 7
Exposure pathways, 7
External standard, 280
Extraction, 276
- Faraday cup, 43
Flame, 25, 33
 air–acetylene, 27
 air–natural gas, 33
 nitrous oxide–acetylene, 27
Flame atomic absorption spectroscopy, 27
Flame-ionization detector, 74
Flame photometer, 33
Food Standards Agency, 192
Fusion, 21
- Gall bladder, 194
Gas chromatograph(y), 52, 72
Gas–liquid separation device, 31
Gastric juice, 197
Gastrointestinal extraction, 193
Gastrointestinal tract, 193, 194
GC–MS, 79
Geophagy, 192
Gradient (HPLC), 75
Graphite atomizer, 29
Graphite furnace, 25, 29
Graphite furnace atomic absorption spectroscopy, 29
- Heated transfer line, 53
Heterogeneity, 276
- High performance liquid chromatography, 52, 74
High-resolution (mass spectrometer), 41, 42
High-transport efficiency, 53
Hildebrand solubility parameter, 153
Hollow-cathode lamp, 25
Homogeneity, 276
Hot-plate, 19
Human physiology, 193
Humic acid, 276
Hydride (generation), 31, 39
Hydrofluoric acid, 102
Hydrogen peroxide, 104
Hydroxyammonium chloride, 103
Hydroxylamine hydrochloride, 103
Hydroxypropyl- β -cyclodextrin (HPCD), 166
Hyphenated techniques, 52
- Ileum, 194
Inclusion complex, 165
Indirect exposure pathways, 7
Induction coil, 34
Inductively coupled plasma, 33
Inductively coupled plasma–atomic emission spectroscopy, 33, 54
Inductively coupled plasma–mass spectrometry, 40, 55
Intake dose, 7
Interference filter, 33
Interferent, 276
Internal standard, 280
Intervention values, 3
Intestinal juices, 196
in vitro gastrointestinal extraction, 193, 195
Ion-exchange, 23
Ion-trap (mass spectrometer), 41, 42, 83
Isobaric interferences, 45
Isocratic (HPLC), 75
Isothermal (GC), 72
- Jejunum, 194, 196
- Karickhoff equation, 185
 K_d , 184, 269

- K_{oc} , 185
 K_{ow} , 184
- Laboratory of the Government Chemist, 140
- Laminar flame, 27
- Land-use, 5
allotments, 5
commercial/industrial, 5
residential, 5
- Large intestine, 194
- Laser ablation, 37
- LGC, 134
- Limit of detection, 277
- Limit of quantitation, 277
- Linear regression analysis, 180
- Linearity, 277
- Liquid samples, 21
- Liquid–liquid extraction, 22, 67, 269, 277
- Liquid–solid extraction, 61
- Liquid scintillation counting, 149, 153
- Liver, 194
- Load coil, 34
- Lumbricus castaneus*, 114
Lumbricus festivus, 114
Lumbricus rubellus, 107, 115, 124
Lumbricus terrestris, 115
- Mass spectrometer, 41
- Mass-to-charge (m/z) ratio, 46
- Mastication, 195
- Matrix, 277
- Matrix-matched calibration solution, 94, 105
- Matrix-matched standards, 198
- Matrix modification, 31
- Maximum-Value Test, 11
- Mean-Value Test, 9
- Membrane separations, 175
- Mercury, 266
- Metal-complexation, 22
- Methyl isobutyl ketone (MIBK), 23
- Methylmercury, 266
- MFO activity, 120
- Microwave-assisted extraction, 64, 277
- Microwave digestion, 277
- Microwave heating, 19
- Mild-solvent extraction, 148
- Minamata disease, 266
- Mineral acid, 21
- Mixed-function oxidase activity, 120
- Molecular interferences, 45
- Monochromator, 25, 32
- Mouth, 194, 195
- Muffle furnace, 19
- Multiple-sample digester, 19
- Mylar, 50
- NaNO_3 , 97
- National Institute for Standards and Technology, 140
- Nd:YAG laser, 39
- Nebulizer, 27, 35
- NH_4NO_3 , 97
- NIST, 140
- Nitrogen–phosphorus detector, 74
- Non-exhaustive extraction techniques, 89, 146, 178
- Normal-phase (HPLC), 74
- Octadecylsilane (ODS), 76
- Octanol–water partition coefficient (K_{ow}), 184
- Octolasion cyaneum*, 119
Octolasion tyrtaeum, 119
- Oesophagus, 194
- Oral bioaccessibility, 193, 195
- Oral ingestion, 191
- Organic carbon-to-water partition coefficient, 185
- Organic solvents, 147
- Outlier, 11, 12, 13, 277
- Oxidizable fraction, 101
- Pancreas, 194
- Pancreatic juice, 194
- Partition distribution coefficient, 184
- PBET, 193
- Pepsin, 194
- Pepsinogen, 194
- Peristalsis, 194
- Pesticide, 277
- Phase diagram, 169
- Photodiode detector, 33

- Photoelectric effect, 33
Photoemissive detector, 33
Photomultiplier tube, 25, 32, 39
Physiologically based extraction test, 193
Phytoaccumulation, 126
Phytodegradation, 126
Phytoextraction, 126
Phytoremediation, 126
Phytostabilization, 126
Phytotransformation, 126
Plant bioassays, 127
Plant uptake, 126, 183
Plasma, 82
Plasma torch, 33
Pneumatic concentric nebulizer, 27, 35
Polyatomic interferences, 46
Polycyclic aromatic hydrocarbons, 278
Polydimethylsiloxane, 69, 174
Porcelain crucible, 19
Precision, 278
Pre-concentration, 21
Prefixes (SI), 281
Pre-mixed laminar flame, 27
Pressurized fluid extraction, 65, 278
Pseudomonas, 150
Pseudo-total, 102, 107, 141
- Quadrupole (mass spectrometer), 41, 83
Qualitative analysis, 278
Quantitative analysis, 278
- Radiation source, 25
Reagent, 278
Reagent blank, 278
Recovery, 278
Reducible fraction, 101
Reference electrode, 51
Reference material, 278
Reflectron, 43, 83
Refractory element, 27
Repeatability, 278
Reproducibility, 278
Residual fraction, 101
Reversed-phase (HPLC), 75
Rhizodegradation, 126
Rhizofiltration, 125
Robustness, 278
Rotary evaporation, 279
- Saliva, 197
Sample, 279
Sample blank, 94, 95, 105
Sampling cone, 40
Sample-skimmer arrangement, 81
Selective extraction, 148
Selective SFE, 172
Selectivity, 279
Semi-permeable membrane device (SPMD), 175
Sensitivity, 279
Separating funnel, 68
Sequential analysis, 39
Sequential extraction, 99
Sequential multielement analysis, 39
Sequestration, 146, 185
Shake-flask extraction, 61, 279
Silica crucible, 19
Si (Li) detector, 51
SI units, 263, 281
Signal-to-noise ratio, 279
Single extraction methods, 90
Skimmer cone, 41
Slot-burner, 27
Small intestine, 194, 196
Smith–Hieftje background technique, 33
Sodium nitrate, 97
Sodium tetraborohydride, 31
Soil Guideline Values (SGVs), 2
Soil organic carbon, 185
Solid-phase extraction (SPE), 68, 178, 279
Solid-phase microextraction (SPME), 69, 174, 279
Solid samples, 18
Solvent extraction, 68, 180, 279
Sonication, 62
Soxhlet extraction, 60, 279
Sparganophilus eiseni, 120
Speciation, 279
Spectral interferences, 45
Spectral overlap, 40
Split/splitless (injector), 72
Spray chamber, 36
Standard, 280

- Standard-additions method, 95, 105, 280
 Standard solution, 280
 Standard, Measurements and Testing
 Programme, 90
 Standard method, 280
 Stock solution, 280
 Stomach, 194, 196
 Sub-critical water extraction (SWE), 174
 Sub-sample, 280
 Supercritical fluid extraction (SFE), 63,
 168, 280
 SWOT analysis, 53, 84
 Systeme International d'Unites (SI), 263,
 281

 Temperature-programmed (GC), 72
 Tesla coil, 34
 Time-of-flight (mass spectrometer), 41,
 43, 83
 Tin(II) chloride, 31
 Transfer factor (TF), 224
 Tributyltin, 266
 Triolein, 175
 Triphenyltin, 266
 Triple point, 169
 True value, 280

 Trypsin, 194
t-value, 9

 Ultrasonic extraction, 62, 280
 Ultrasonic nebulizer, 36
 Unit prefixes, 281
 Units, 281
 Uptake dose, 8
 UV/visible (spectroscopy), 77

 Venturi effect, 28
 V-groove nebulizer, 35

 Wavelength-dispersive XRF, 50
 Wavelength selection, 25
 WDXRF, 50
 Working electrode, 51
 Worms (*see* Earthworms)

 X-ray (source), 50
 X-ray fluorescence spectroscopy, 49, 55
 Xylem, 184

 Zeeman effect, 33