

Index

a

absorption techniques 244
 acetylcholine esterase (AChE) inhibitors
 415, 501
 acetylsalicylic acids 242, 604, 607
 AChE-based flow systems 415
 acid-base titrations 441
 active operated devices 172
 – real-time sample conditioning 172
 – self-optimization of the flow system 172
 adsorptive stripping voltammetry 116
 advanced calibration methods 203
 advanced research projects agency network
 (ARPANET) 321
 affinity chromatography 484
 affinity microcolumn 94
 aliphatic amines 433
 alkaline phosphatase 160
 amines 233
 – derivatization of 233
 ammonium ion-selective electrodes 412
 amperometric biosensor 415
 amperometric detectors 412
 amperometric technique 625
 angiotensin converting enzymes (ACE)
 499
 aniline 240
 – derivatization of 240
 anionic surfactants 374
 – CL determination of 374
 anodic stripping analysis (ASV) 459
 antiretroviral drugs 252
 – didanosine 252
 – zidovudine 252
 artificial neural networks (ANNs) 250
 – models 250
 ascorbic acid 241, 605, 624
 – binary determination of 241

at line, robotic arm 275ff.
 atmospheric pressure chemical ionization
 (APCI) 553
 atmospheric pressure photoionization
 (APPI) 553
 atomic absorption spectrophotometry (AAS)
 50
 atomic fluorescence spectrometry 527, 608
 automated manifolds 531
 automated-screen-printing technology 435
 auxiliary reagents 244

b

bacterial cells 156
 – lysis of 156
 batch cells 107
 batch injection analysis 107, 119
 – capillary 119
 beads 82
 – analysis 80
 – injection 60
 – packed column 69
 – suspensions 88
 Beer's law 607
 beta-adrenergic drugs 433
 bienzymatic glutamate biosensor 397
 bioassay system 155
 – integration of 155
 biocatalytic process 395
 – specificity 395
 biochemical assays (BCAs) 483
 – immunoaffinity-based 496
 – implementation 483
 – methodologies 483
 – technique 162
 biological fluids 190
 bioluminescence 365
 biosensor chips 461

- BIS-FIA fluorimetric methodology 371
 bismuth electrodes 461
 Bratton–Marshall reaction 605
- c**
- calibration curve method 203, 253
 calibration graph(s) 205, 212, 214
 – multi-line two-point 212
 calibration methods 247
 – multivariate 247
 calibration strategy, *see* standard addition method (SAM)
 capacity-time curves 469
 capillary chromatography 139
 capillary electrophoresis (CE) 142, 134, 274ff., 546, 561
 – systems 53, 134
 – techniques 135
 carbamate pesticides 415
 carbon-based electrodes 622
 carbon paste 116
 catalytic electrode processes 469
 cathodic stripping analysis (CSV) 459
 cation exchange polymers 115
 cell-based assay 164
 cell design 110ff.
 cell suspension 156
 chelating reagents 153
 chemical operations 228
 – liquid-liquid extraction 228
 – solid-phase extraction 228
 chemical oxygen demand (COD) 585
 chemical processing (CFCP) 149
 chemical reaction 157
 – real-time monitoring 157
 chemical vapor generation 512
 chemically modified electrodes 623
 chemiluminescence 51, 614
 – advantage of 614
 – based determinations 615
 – cerium(IV)-based CL systems 359
 – detector 51
 – direct 360
 – electrogenerated 360
 – luminol 359
 – methods 590, 614
 – permanganate-based 360
 – peroxyoxalate 359
 – reagents 374
 – sensors 374
 – solid-phase 372
 – *Tris*(2,20-bipyridyl)ruthenium(II) 359
 chemiluminescent reaction 617, 618
 chemiluminometric methods 244
 chemometric methods 232, 250, 252
 – performance of 250
 chemometric techniques 245
 – data analysis 245
 chip-based slide valve 160
 chip technology 152
 chromatomembrane cell (CMC) 590, 591
 – device 592
 – membrane 592
 – system 592
 chronoamperometry 109
 – potential-step 109
 Clark-type oxygen electrode 416
 combined injection methods 70
 comma separated variable (CSV) 323
 commutation 168
 – commuter 168
 – rotary valve 168
 – sliding bars 168
 – solidary commutation (mechanical) 168
 components of flow systems
 – contribution to dispersion 21
 – detection 24
 – injection 23
 – transport 25
 computer-controlled burettes 54
 computer-controlled flow method 577
 continuous flow analysis 44, 346, 639, 659
 – technique 44
 – trends 659
 continuous flow analyzers 639
 – configurations 44, 45
 – system 646
 – technique 44
 continuous flow voltammetry 624
 controlled dispersion 176
 controlled variable volume injection 54
 coulometric flow cells 462
 cumulative injection 55
 current-voltage curves 457
 cyanide amenable to chlorination (CATC) 651
 cystine 240
- d**
- data sets 245
 – data augmentation 246
 – one-way data 245
 – three-way data 246
 – two-way data 246
 – zero-way data 245
 derivatization 240, 350ff., 351, 612
 – electrochemical 612
 – hydrolysis reactions 350
 – liquid extraction 612

- photochemically induced fluorescence (PIF) 350ff.
 - processes 603
 - reactions 293
 - desorption electrospray ionization (DESI) 546
 - detection 112
 - amperometric 112, 114
 - calorimetry 114
 - optical 114
 - potentiometric 112, 114
 - voltammetric 114
 - deuterated solvents 158
 - dialysis 228, 274
 - ASTED 274
 - derivatization 228
 - gas-diffusion 228
 - microdialysis 274
 - process 50
 - diazotization-coupling reaction 581
 - diffusion-convection equation 9
 - diffusion layer 109
 - diffusion limited current 108
 - digital detectors 659
 - dimensionless numbers in flow systems 11
 - DIN transient signals 559
 - diode array spectrophotometers 602
 - direct analysis in real time (DART) 546
 - direct injection nebulizer system (DIN) 554
 - dispersion in flow injection analysis 7
 - disposable syringe 53
 - dissolution reactions 520
 - distribution of times of residence 10
 - double-beam spectrophotometer 242
 - double-injection flow system 604
 - drug analysis 611
 - flow-fluorimetry 611
 - drug dissolution 628
 - drug release testing 628
 - drugs 605
 - FIA spectrophotometric analysis 605
 - FIA spectrophotometric determinations 605
 - dual sequential injection analysis 71
 - DUMAS method 645
- e**
- EAD systems 501
 - ECD-FA methods 458
 - Ehrlich's reagent 606
 - electrokinetic (EK) injection 142
 - electrical double layer (EDL) 129
 - electrochemical detectors (ECDs) 89, 107, 455
 - electrode arrays 443
 - electrode fouling 459
 - electrodes 108
 - wall-jet 108
 - wall-tube 108
 - electromagnetic radiation 614
 - electromigration techniques 425
 - electroosmosis 127
 - based pumps 129
 - phenomenon 127
 - electroosmosis-driven flow 129
 - electroosmotic flow (EOF) 129
 - based pump 131, 140, 143
 - channel(s) 137
 - driven flow analysis system 134, 136, 142, 143
 - electrokinetic injection 142
 - flow analysis system 145
 - flow rate 139
 - hydrodynamic/pressure injection 142
 - microchannel-based 138
 - pH-dependent 139
 - principles 129
 - pumped SIA system 143, 145ff.
 - valve injection 142
 - electrospray ionization mass spectrometry (ESI-MS) 485, 486
 - electrothermal atomic absorption spectrometry 468, 520
 - emission-based methods 614
 - techniques 244
 - enzymatic cofactors 243
 - detection 416
 - enzymatic signal amplification 496
 - enzyme activity 412, 415
 - assays 415, 635
 - measurements 412
 - enzyme affinity detection (EAD) system 500
 - enzyme flow assays 498
 - enzyme inhibitor detection 415
 - enzyme-linked immunosorbent assay 162
 - microchip-based 162
 - enzyme-linking immunoassay system 466
 - enzyme substrates 396
 - enzymes, immobilization 373, 374
 - Escherichia coli* 412
 - ETAAS detection 93
 - Extensible Markup Language (XML) 340
 - extrapolative version of multivariate calibration 219
- f**
- fast-switching solenoid valve 63
 - ferricyanide-aminoantipyrene reaction 603

- FIA-FTIR method 608
 - FIA-FTIR spectroscopy 608
 - FIA-ICP-MS 556
 - FIA-ICP-TOFMS 556
 - FIA-MS methods 245
 - field effect transistors (FET) 435
 - first-order methods 250
 - partial least square regression (PLS) 250
 - principal component regression (PCR) 250
 - flame atomic absorption spectrometry 244, 512, 608
 - flame emission spectrometry 208
 - flow-based molecular absorption spectrophotometry 602
 - flow analysis applications
 - database 323
 - environmental applications 577
 - techniques 43
 - flow biochemical assays 491
 - on-line coupling 491
 - flow conductimetric determinations 619
 - flow injection analysis (FIA) 43, 46, 63, 107, 203, 205, 218, 227, 244, 321, 395, 484, 556, 560, 577
 - applications 560
 - calibration methods 203, 209, 210, 220
 - configurations 556
 - drug analysis 607, 608
 - electrochemical detection 244
 - enzyme assays 488
 - enzyme-based 412, 417
 - fluorescence-based methods 351
 - gradient concept 217
 - immobilized reagents 237
 - immunoassay 162
 - ligand-binding assays 488
 - manifold 220, 556
 - methods 221, 231, 587, 609
 - multicomponent 227, 234, 237
 - multi-syringe 208
 - polarographic determinations 622
 - principles 46
 - procedure 209, 210, 214
 - pseudo-titrations 606
 - rotary injection valve 64
 - systems 159, 160, 162, 213
 - titrations 441
 - flow injection mass spectrometry 487, 545
 - analysis 545
 - automated 641
 - bioreactor-based 403, 411
 - biosensor-based 397
 - importance 545
 - photometric 413
 - potentiometric 414
 - role 545
 - signals 604
 - turbidimetric determinations 606
 - UV–vis configurations 607
 - UV–vis method 608
 - flow injection multicomponent 232, 237
 - analysis 252
 - chemiluminescence 243
 - determinations 237
 - immunoassay-based 237
 - manifold 232
 - methods 229, 230
 - optimization process 229, 230
 - flow potentiometry 425
 - flow processing devices 265ff.
 - flow systems 205
 - batch flow injection analysis 6
 - classification and fundamentals 4
 - continuous flow analysis 4
 - feature 205
 - flow injection analysis 4
 - multicommutation 5
 - sequential injection analysis 4
 - stopped flow 6
 - flow voltammetry 455
 - fluorescence-based flow methods 612
 - fluorescence 349, 350
 - complexation 351
 - laser induced 349
 - native, 347ff.
 - solid phase 350ff.
 - solid surface 350
 - spectrometry 346
 - fluoride-selective electrode 621
 - fluorimetric assay 60
 - food analysis 182
 - FTIR spectrophotometry 608
 - fully rotary valve (FRV) 206
 - fused silica capillaries (FSCs) 129
- g**
- galactic network 321
 - gas diffusion 50, 57
 - scrubber 590
 - gas displacement pump (GDP) 554
 - gas-liquid device 563
 - gas-segmented flows 501
 - Gaussian distribution profile 554
 - GC-MS interface devices 551
 - generalized standard addition method (GSAM) 219

glass disk 138
 glass electrodes 621
 glassy carbon 115
 glucose 67, 117
 – chemiluminescence-based determination 67
 glucosidase bioreactor 413
 glutamic acid 607
 gradient dilution calibration 216
 Griess reaction 56, 155, 647, 649
 Griess–Saltzman reaction 144
 Grignard reaction 159

h

Hagen–Poiseuille equation 128
 hemoglobin 117, 118ff.
 high-performance liquid chromatography (HPLC) 241, 483, 490, 496, 501
 – analysis 483
 – instruments 241
 – methodologies 496
 high temperature liquid chromatography (HTLC) 501
 high throughput screening (HTS) techniques 483
 homogeneous systems 602, 603
 horseradish peroxidase (HRP) 67
 hydride generators 555
 hydrobromic acid 610
 hydrodynamic injection 53, 61, 142
 hydrodynamics 109ff., 110ff.
 hydrolysis reactions 350
 hyphenated techniques 529

i

immobilized biomacromolecules 237
 – nucleic acids 237
 – proteins 237
 immunoassay system 162
 – semi-automated heterogeneous 162
 immunochemical determinations 95
 in-line distillation 639
 in-line UV digestion 639
 – industrial and environmental applications 639
in situ spectrophotometric detection 51
 index analysis 654
 – flow diagram 654
 indirect determinations 519
 indophenol blue methods 580
 inductively coupled plasma-atomic emission spectrometry (ICP-AES) 244
 inductively coupled plasma-mass spectrometry (ICP-MS) 244

– detection 93
 infrared absorption 607
 inhibition 116
 – enzyme-catalyzed hydrolysis 116
 injection 47, 48
 – merged 48, 70
 – process 68
 – proportional 48
 – rotary valves 47
 – techniques 43
 – valve 49, 58
 inorganic fillers 237
 inorganic oxidants Ce(IV) 603
 interpolative standard addition method 211
 ion carrier 428
 ion-exchange membranes 50
 ion exchanger beads 139
 ion-exchange resins 374
 ion exchanger, *see* ionophore
 ion-pair extraction reaction 152, 154
 ion-selective electrode(s) 415, 425, 426, 619
 – direct determinations 619
 – indirect determinations 620
 ion-selective ionophores 153, 428, 430, 433
 IR spectrophotometry 607
 IR systems 607
 isotope dilution (ID) 556

j

jet ring cell 85, 87
 Journal of Flow Injection Analysis (JFIA) 327

l

lab-on-a-chip, *see* microfluidic devices
 lab-on-valve (LOV) 60, 149, 521, 601, 634
 – bead injection 635
 – microconduits 69
 – systems 61
 lab-on-valve to capillary electrophoresis equipment (LOV-CE) 61
 laser ablation 550
 LED-based absorbance detector 135
 ligand-binding flow assays 493
 – on-line 493
 limit of detection (LOD) 578
 linear sweep voltammetry 109
 lipid regulators 69
 lipophilic pH indicator 154
 liquid chromatographs 271ff.
 – post-column arrangements 271
 – pre-column arrangements 271
 liquid flow techniques 425
 liquid handling system 127
 liquid-liquid extraction 606, 610

- systems 609
- luminescence phenomena 346ff., 610
 - chemiluminescence 346
 - fluorescence 346
 - phosphorescence 346
- luminescence detection 53
 - bioprocess monitoring 53
 - immunoassay 53
- luminescence, solid-phase 366
- luminol chemiluminescence 617
- lytic agent 156

- m**
- magnetic microparticles 82
- magnetic nanoparticles 99
- mass spectrometry-based biochemical assays 488
 - requirements 488
- matrix-assisted laser desorption/ionization (MALDI) 485
- matrix effects 555
- measurement of dispersion 15
 - approaches 21
 - axial dispersion, degree and intensity 19
 - “D” coefficient 16
 - peak variance and theoretical plate height 18
 - peak width and time of appearance 17
- membrane-based systems 607
- membrane liquid/liquid extraction 270
 - hollow-fiber membranes 270ff.
- merging-zones technique 219
- metal-ligand interaction
 - (metalloporphyrins) 430
- methylene blue active substances (MBAS) 640
- Michaelis–Menten theory 412
- micro-column reactors 237
- micro flow systems 127
- micro-total analysis systems (μ TAS) 142, 220
- micro-unit operations 149
 - phase separation 150
 - solvent extraction 150
- microbead suspensions 82
- microchannels 159
- microdialysed samples 524
- microelectrode arrays 116
- microemulsion 526
- microfluidics 94
 - channels 137
 - T-shape 137
- microfluidic chip(s) 95, 138
 - platforms 138
- microfluidic devices 149, 162, 163
 - microfluidic systems 374
 - micropipette tip 110
 - microporous materials 141
 - monolithic column materials 141
 - porous glass frits 141
 - microprocessor-controlled electronic pipette 206
 - microsensor array 244
 - microvolumes 107
 - miniaturization 95, 265
 - modalities of flow analysis 181
 - models of transport 25
 - axially dispersed plug flow model 26
 - descriptive “Black Boxes” 25
 - random walk 28
 - tanks-in-series model 27
 - uniform dispersion model 26
 - molecular absorption spectrophotometry 602
 - molecular imprinted polymers (MIPs) 374, 587
 - molecular imprinting processes 618
 - molybdenum blue method 584
 - monoenzymatic electrodes 397, 402
 - MS ionization chamber 551, 552
 - multi-collector (MC) spectrometer 559
 - multi-commutated flow techniques 72
 - addition/removal of manifold components 171
 - concentration-oriented feedback mechanisms 169
 - concept 181
 - definition 169ff., 171ff.
 - intermittent stream 169
 - merging zones 170
 - multi-commuted flow system 171
 - sample stopping 170
 - multi-dissolution vessels 628
 - multi-injection systems 241
 - multi-insertion principle 62
 - multi-ion sensing system 152, 154
 - integration of 152
 - multi-point calibration graphs 205
 - multi-port valves 241
 - multi-pulse amperometry 456
 - multi-pumping flow injection analysis 346
 - multi(bio) sensor arrays 244
 - multicollector mass spectrometer (MCMS) 548
 - multicommutated flow injection analysis (MCFIA) 61
 - manifold 61
 - systems 61

multicomponent analysis 229
 – principal 229
 – strategies 229
 multicomponent determinations 239, 602
 multiparametric analysis 57
 multipumping flow systems (MPFS) 69
 multisyringe burettes 66
 multisyringe flow injection analysis
 (MSFIA) 63
 – LOV system 69
 – MPFS system 72
 multivariate calibration 249
 multivariate measurement 219
 multivariate optimization 231, 232
 – simplex algorithm 232
 multivariate responses 219

n

Nafion membranes 410
 nanofluidics 100
 – devices 164
 nanoparticles 98
 nanotechnology 98
 nebulizer-flame devices 244
 Nikolskii–Eisenmann equation 427
 nitrate ions 50, 56, 57
 – reduction 57
 – SIA determination 56
 nitrite 56, 117, 144
 – SIA analysis 144
 – SIA determination 56
 non-chromatographic separation
 techniques 274
 – dialysis 274
 – gas diffusion 274
 non-chromatographic separation
 technique 268, 280
 – liquid/liquid extraction 270
 – liquid-phase microextraction 280
 – membrane liquid/liquid extraction 270
 – microwave-assisted extraction 269
 – pervaporation 270
 – pressurized hot water extraction 270
 – solid-phase microextraction 280
 – sonication-assisted solvent extraction 270
 non-steroidal antiinflammatory drugs 69
 non spectroscopic interferences 555
 – matrix effects 555
 nuclear magnetic resonance (NMR) 157,
 158, 244
 – instrument 157, 158
 – measurement 158
 – microscale 157
 nucleoside hydrolysates 242

o

off-scale dilutions 659
 on-chip ion sensing 154
 – system 152
 on line 277
 – chemical derivatization reactions 293
 – immobilized enzymes 293, 296
 – chemical vapor generation 513
 – digestion
 – microwave radiation 292
 – ultrasound radiation 292
 – UV radiation 292
 – dilution 526
 – gas sampling 303
 – membrane-based separation 302
 – diffusion scrubber 304
 – Donnan dialysis 310
 – gas diffusion 292
 – microdialysis 304
 – passive dialysis 304
 – pervaporation 292
 – supported-liquid membrane 292
 – photodegradation tests 615
 – sample processing 291
 – cold vapour 309
 – co-precipitation 300
 – dilution 292
 – gas-liquid separation 301
 – hydride generation 301
 – precipitation 300
 – solid samples 306
 – dissolution 306
 – extraction 306
 – leaching 306
 – solvent extraction 294
 – back-extraction 294
 – cloud-point extraction 296
 – extraction chromatography 296
 – flow-batch extraction 292
 – liquid membranes 292
 – micelle-mediated extraction 292, 296
 – wetting-film extraction 297
 – sorbent extraction 297
 – bead injection 300
 – extractive membranes 297
 – imprinted polymers 299
 – knotted reactors 292
 – packed columns 299
 – solid-phase optosensing 299
 – split-flow interface 277ff.
 on-tube detectors 127
 optosensing, RTP-based 371
 organic compounds 586
 – toxic/hazardous 586

- organic/aqueous interface 150
- organized media, fluorescence 349
- organophosphoric insecticides 415
- spectrophotometric assay 415
- p**
- p*-aminobenzoic acid 604
- packed-bed reactor 67
- packed columns 522
- parallel configurations 241
- parallel factor analysis (PARAFAC) 248
- partial least square regression (PLS) 248
- passively operated device 171
- sample stopping 172ff.
- penicilloic acid 621
- pentoxyverine citrate 616
- chemiluminescent reaction 616
- peristaltic pump 49, 54, 63, 128, 209
- pH indicator dye 152
- pharmaceutical compounds 117
- pharmaceutical formulations 602
- analysis 602
- phenyl barbituric acid 615
- phosphate 117
- phospho-molybdic acid complex 649
- phosphonium salts 429
- phosphorescent light 614
- photoluminescence detection 87
- physico-chemical processes 601
- heterogeneous 601
- homogeneous 601
- piezoelectric pumps 128
- piston pumps 55, 129
- Plackett–Burman designs 232
- plant and soil analysis 188
- plant digests 188
- poly(methylene blue) 117
- polymer films 115
- polymeric chip 127
- polymeric ion exchangers 139
- polymeric substrate (PDMS) 136
- membrane 159
- valves 159
- polytetra-fluoroethylene (PTFE) 160
- membrane diffusion cell 619
- tubes 127
- porous borosilicate glass 139
- post-column reaction 67
- potentiometric biosensors 402
- potentiometric detection 91, 244
- precipitation reactions 520
- preconcentration 514, 527
- on minicolumns 513
- preconcentration/separation systems 512
- preparative techniques 511
- principal component regression (PCR) 248
- properties of fluids and transport phenomena 7
- diffusion 8
- diffusivity 8
- thermal conductivity 8
- viscosity 7
- protein–ligand interactions 483, 485
- protein–protein interactions 483
- pulse-based injection 70
- pulsed sample introduction interface (PSI) 553
- PVC membranes polymer 435
- matrix 430
- q**
- quadrupole mass spectrometer (QMS) 547
- quantitative structure-activity relationship (QSAR) 433
- approach 433
- quantum dots 375
- quasi-independent techniques 440
- r**
- radial dispersion, intensity 20
- radio frequency (RF) power supply 554
- radiometric detections 91
- reaction-based calibration 217
- rearguard configuration 266 ff.
- renewable column 83, 84, 91
- reporter-free assays 489
- retaining microbeads 85
- room temperature phosphorescence (RTP) 355ff.
- rotary hexagonal valve 47
- rotary injection valve 47
- rotary valves 47, 64
- RTD waves and generation of signals 12
- controlled dispersion 13
- dispersion process 12
- transient profile 14
- s**
- sample dilution 519
- sample incubation 178, 179
- zone trapping 179
- sample inserted volume 177
- sample introduction 175, 176
- hydrodynamic injection 175
- introduced sample aliquot 175
- loop-based injection 175
- multiple injections 176
- time-based injection 175

- sandwich technique 55
- screen-printed (disposable) electrodes 465
- screen-printing technology 435
- second-order calibration 252
- second-order data, *see* two-way data
- sector field mass spectrometers (SFMS) 547
- segmentation-retention process 55
- segmented flow analysis technique 45
- segmented flow analyzers (SFA) 639
- selection valve (SV) ports 59
- semi-automated flow/bead-injection system 413
- sensors 366
- sequential determination 240
- sequential injection 71
- multisyringe flow injection systems 71
- sequential-injection analysis (SIA) 53, 57, 346, 436, 565, 577
- amperometric immunosensing 238
 - based colorimetric analysis 138
 - bead injection system 634
 - electroanalytical systems 622
 - flow cell 604
 - liquid drivers 55
 - method 238, 611
 - optimization of 143
 - sandwich systems 56
 - switching valves 71
 - system 54, 59, 71, 43, 239, 565, 611, 612, 628, 630, 632
- sequential spectrometers 559
- set of standards method (SSM) 203, 204, 207, 211, 214, 215
- Shinn's reagent 49
- silica-based pumps 140
- simplification 265ff.
- single-channel FIA assemblies 603
- single-line FIA system 134
- single-syringe burette 71
- six-way valve, *see* rotary valve
- sliding bar commutator 170
- intermittent stream 170
- small-sized thin solid phase (STSP) columns 590
- Smoluchowski equation 130
- soft ionization techniques 485
- soil extracts 188
- solenoid piston micropumps 69
- solenoid pumping system 579
- solenoid valves 559
- solid-liquid extraction 618
- solid-liquid heterogeneous systems 613
- solid-phase absorptiometry 86
- solid-phase enzymatic reactors 627
- solid-phase extraction 55, 179, 269, 272, 468, 514, 586
- solid-phase reactor 609, 612, 613, 621
- solid-state electrodes 435
- solid particles 79, 80, 81
- solution additions to the sample 178
- flow titrations 178
 - standard addition method 178
- spectrophotometric method 582, 603
- spectroscopic detection methods 587
- atomic absorption 587
 - ICPAES 587
 - ICP-MS 587
- square-shaped signal 45
- square wave voltammetry (SWV) 458
- stand-alone analytical techniques 127
- standard addition method (SAM) 556
- application 556
 - methods 205, 207, 211, 214, 215
- stopped-flow technique 219
- strict-sense flow 463
- stripping voltammetry 115
- anodic 115
- sugar analysis 655
- flow diagram 655
- sulfur dioxide 241
- binary determination of 241
- surface-enhanced resonance Raman spectroscopy (SERRS) 470
- surfactant-coated alumina 610
- synchronous injection 67
- syringe micropumps 128
- system operating mode 172, 173
- aspirating 173
 - hydrodynamic pressure 172ff., 173ff.
 - propelling 172
- t**
- tandem streams 62, 174
- binary sampling 174
 - injection 62, 174
 - liquid interfaces 174
 - mixing conditions 174
- tannic acid system 617
- Teflon membrane 139
- tetrabutylammonium cation 134
- thermal/calorimetric 114ff. 119
- optical 114, 119
- thick-film urea biosensors 412
- thin-layered flow cells 466
- three-channel solenoid valve 554
- time-based injection 61, 62, 65
- techniques 43

- time-based injector 206
 - time of flight mass spectrometers (TOFMS) 549
 - time window 167
 - external timing 167
 - TiO₂-mediated photodegradation reactor 466
 - total analysis systems (mTAS) 149
 - trace elements 515
 - trace metal ions 115, 116ff.
 - transient-sampling technology, *see* laser ablation
 - transient signal 441
 - tubular reactors 237
 - two-point multi-line graphs 213
 - two way data 246
 - two-way liquid drivers 55
- u**
- univariate calibration, *see* zero-order calibration 248
 - univariate optimization 231
 - UV digester 647
 - UV light source 603
 - UV–vis detection 496, 602
 - UV–vis heterogeneous systems 606
 - UV–vis spectrophotometry 53, 208, 243, 607
 - instruments 242
 - measurements 59
- v**
- vanguard configuration 266ff.
 - volatile reaction 52
- voltage drop 138
 - voltammetric curve 112
 - pseudo-steady-state 112
 - voltammetric method 624
 - voltammetric microcells 465
 - voltammetric studies 624
 - voltammetric techniques 244, 458
 - voltammetric/amperometric flow analysis 456
 - principles 456
 - techniques 456
 - voltammetry 112
 - cyclic 112
 - square wave curve 112
 - volume-based injection 43
- w**
- wall-jet 109ff., 110, 111
 - detection mode 434
 - water analysis 184
 - weak acid dissociable cyanide 651
 - widening dynamical concentration range 178
 - Wittig reaction 159
- z**
- zero-order calibration 248
 - zone penetration technique 219
 - zone sampling 168, 169, 178ff.
 - external timing 169ff.
 - technique 219