

Index

a

absorption detector
spectroscopic 191
absorption detector flow cell 88
absorption spectroscopy 206
acetaminophen 76, 80, 84, 85
acetone 71
acetonitrile 58, 88, 90, 98, 116, 171, 176
actual measurement 108
adsorption 186
adsorption isotherm 210
affinity chromatography (AC) 171
affinity step separation 163
Agilent system 80, 84
alkali metal hydroxide eluent 117
alkanolamine 138
amine
 biogenic 138
 cyclic 138
amino acid analyzer 129
amino column 179
amino group 167
aminoalkylsulfonic acid 124
aminophenol 76, 85
ammonium acetate 180
ammonium formate 180
analyte 3, 104, 106
 detectability 203
 polar 202
anion exchanger 130
 high-capacity 126
anion trap column (ATC) 121

anion-exchange chromatography 117, 164
anion-exchange resin 121
anions
 chaotropic 178
 cosmotropic 178
anisocratic elution 216
antibody
 monoclonal 118, 144
atmospheric pressure 75
atmospheric pressure chemical ionization 201
automatic screening systems 99
autosampler 65, 68, 79, 86, 194

b

back pressure 73, 216
back pressure gradient 185
baseline ripple 91
baseline waviness 94
bend factor 104
biobuffer 161
biochromatography 161, 162
biomolecule 161
 conformation 163
 reversed-phase chromatography 170
blind gradient 92
buffer 165
 unpolar 162
buffer system 146

c

camshaft drives 73
 capacity factor 114, 115
 capture step 163, 172
 carbohydrate 131
 carbohydrate membrane desalter (CMD) 133, 151
 carbonate removal device 127
 carbonate suppressor 120
 cation
 salting-out 179
 cation exchanger 136
 cation-exchange 90, 142
 cation-exchange chromatography 118, 164
 charge heterogeneity 144
 charged aerosol detector 201
 chlorthalidone 202
 chromatofocusing 162, 167
 chromatographic definitions 5
 chromatographic material 219
 Cl^- ion 166
 coelution 22, 77, 177
 column 67
 back pressure 82
 bleeding 198
 dimension 106, 208
 equilibration 206
 length 103, 104
 reconditioning 208
 rinsing 98
 temperature 96, 179
 thermostat 80, 96
 volume 98
 column frits 48
 column inlet 65
 column length 27
 combination of flow and temperature gradients 217
 composition gradient 116, 137
 compressibility control algorithm 60
 computer-aided fluid dynamics (CFD) 48
 frit mixer 49
 concentration gradient 116, 125, 134
 conductivity detection 148
 conductivity detector 162

convection 62
 Coulomb explosion 204
 coupled cam drive 94
 crosslinking 116
 cryptand 117
 $(N$ -cyclohexylamino)-1-propanesulfonic acid 124
 cyclone chamber 49

d

damping 53, 54
 dead space 29
 dead volume 7
 degasser effect 71, 72
 degasser volume 71
 derivatization 64, 152
 derivatized amino acids (AAA) 63
 detection 88
 detection limit 8
 detection wavelength 89
 detector
 nebulizer-based mass-sensitive 201
 spectroscopic 191, 201
 diffusion 62
 diffusion coefficient 215
 digital chromatography 190
 diglycolic acid 137
 diode array detector 88
 Dionex Acclaim Trinity P1 and P2 columns 153
 Dionex CarboPac PA1 anion exchanger 124
 Dionex GlycanPac AXR-1 column 152
 diquat 141
 dispersion 86
 distribution chromatography 164
 Dolan test 53, 67, 70, 78
 Downsizing 208
 dwell time 107, 194
 dwell volume 15, 31

e

echo technique 205
 effective volume 6
 efficiency 10
 electrolysis chamber 122, 124
 electrolyte reservoir 122

- electrospray ionization 198, 201, 209
 eluent 3, 148
 additive 49, 88
 aqueous 116
 composition 63, 87
 influence of fluctuations 87
 ion concentration 114, 119
 preheater 86
 eluent component 42
 eluent composition 41, 45
 Eluent Generator 121, 122
 eluent preheating 81
 elution
 buffer 163
 force 77
 gradient 77
 isocratic 85
 order 27, 125
 polar components 30
 power 96
 reversal 17, 22, 30, 34, 77
 strength 7, 38, 85, 175
 enhanced fluidity liquid
 chromatography 183
 entropy 169
 EPG phases 14
 equilibration 98, 178, 184
 equilibration phase 78
 ethacrynic acid 202
 evaporative light scattering detectors
 201
 extracolumn volume 210
- f**
 flexibility 220
 flow correction 60
 flow error 197
 flow gradient 216
 HPLC assay 216
 flow rate 42, 59, 73, 186, 209
 flow rate gradient 185
 fluidic component 75
 focusing effect 123
 food and beverage analysis 138
 fraction collector 161
 frit filter 193
 frit mixer 48
 fronting 193
 fructooligosaccharide (FOS) 134
 fusion-molecule 172
- g**
 gas chromatography 96
 gel-filtration 164
 ghost peak 21
 glutathione S-transferase system 173
 glycan 151
 glycolate 127
 glycoprotein 131
 gradient
 alternative and combined 96
 anion 120
 anions and cations on mixed-mode
 stationary phase 148
 anions on anion exchanger 126
 ballistic 45
 binary 61
 biochromatography 161
 cations on cation exchanger 136
 delay 208
 delay volume 41, 46, 48, 65, 210
 device 95, 97
 duration 12, 17, 21, 38
 dwell volume 51
 effect 185
 elution 3, 5, 15, 113, 114, 120, 126,
 136, 148
 general conditions 15
 inorganic anion 113
 lanthanide 137
 organic anion 113
 flat 14
 flow 17
 fluidic flush-out behavior 82
 generic 14
 high-pressure 32
 inverse 200, 201
 ion-exchange chromatography 116
 ionic compounds 113
 late start 82
 LC-MS analysis 189
 linear 162
 long 14
 low-pressure 32

- method transfer 66
 mixer 68, 76
 mobile phase 183
 mode 96
 myth 14
 optimization 3, 180
 polarity 162
 prestart 80, 81
 program 80
 pump 60, 65, 66, 80
 quaternary 98
 ramp 72
 run 116
 salt concentration 162
 separation 3, 7
 slope 39, 106, 148
 solvent 183
 special features 3
 stepwise elution 113
 system 41
 binary 41
 quaternary 41
 systems 98
 theoretical aspect 114
 volume 6, 10, 23, 38, 191
 window 45
 gradient delay 107
 gradient delay volume 196, 200
 chromatographic result 76
 determination method 66
 deviating 80
 Dolan method 70
 flow dependence 73
 marker-pulse method 68
 possibilities of influence 77
 pressure dependence 73, 82
 gradient volume 11
- h***
- helical structure
 internal 50
 high pressure gradient (HPG) 41
 HPG-Sync 64
 mixing device 42
 pump 43, 54
 TFA mixing behavior 95
 high-pressure gradient pump 195
- high-throughput analysis 192, 207
 Hofmeister series 170
 HPLC experiment 217
 hydrophilic interaction chromatography 198
 hydrophilic interaction liquid chromatography (HILIC) 175
 hydrophilic liquid chromatography 215
 hydrophobic interaction chromatography 168
 hydroxide eluents 120
 hydroxide generation
 electrolytic 117
 hydroxide ion 116
 hydroxide ion concentration 120
 hydroxide-selective anion exchanger 120
- i***
- ibuprofen 82, 155
 impurity 81, 198
 impurity peak 84
 increase of the flow 13, 38
 inhomogeneity 43
 axial 43
 injection synchronization 197
 injection volume 86, 210
 in-line desalting 133
 integrated pulsed amperometric detection (IPAD) 129
 interaction 11
 interfering peak 21
 inulin 133
 inverse gradient 200
 ion
 desolvated 198
 pair reagent 198
 ion exchanger
 strong 167
 weak 167
 ion pair retention 90
 ion suppression 192, 204
 ion-exchange chromatography 114, 164
 irregular components 15
 isocratic separation 8

isoelectric point 163
isosbestic point 90

k

k value 103, 106

I

labeled
glycan 152
lanthanide 125, 137
lanthanum 137
leak rate 195
leakage rate 63
length of the column 38
ligand
hydrophobic 170
strength 170
linearly solvent strength 104
liquid 61
liquid chromatography 183, 189, 191, 209
longitudinal mixing 50
low pressure gradient (LPG) 41
 HPG-Sync 64
 mixing device 42
 pump 43, 63, 195
 dosing error 63
 TFA mixing behavior 95
lutetium 137
lysine residue 118, 142

m

magnetic stir bar 47
marker 67
 peak 69
marker-pulse method 68, 73
mass filter 194
mass spectrometer 189, 191, 198, 199, 211
mass spectrometry 189, 209
 quantitation 204
matrix 204
 effect 204
metering device 79
 idle volume 79, 82
methanesulfonic acid 124
methanol 31, 58, 62, 68, 98, 116, 183

method development 215
method development software 99

method scouting 98

method transfer 7

microfluidic mixer 51

microfluidic technology 55

microleakage 195, 196

micromixer 50

mixed ripple 91

mixed-mode phase 14, 148

 bimodal 150

mixer

 (metal) frit-based 48

 damping effect 55

 dynamic 47

 longitudinal 44, 53

 microfluidic 51, 56

 permeability problem 52

 static 47

 volume 47, 58, 77

mixing

 axial or longitudinal 43

 chamber 49

 longitudinal 50, 58

 quality 90

 radial 42, 49

 ripple 90, 94

 volume 92

mixing chamber 35, 36

mixing column 47

mixing efficiency 36

mixing valve 42

mixture

 binary 97

mobile phase 185

mobile phase viscosity 217

modifier 183, 184, 198

multiposition selector valve 98

n

Na⁺ ion 166

nanobead 116

nonlinearity 146

nontargeted screening 189

o

oligonucleotide 134
 oligosaccharide 130, 133
 on column concentration 8
 one-beam optic 88
 organic acid 129
 organic solvent 216
 outlet valve 52
 oxalic acid 137

p

p-cyanophenolate 124
 paracetamol 76
 paraquat 140
 particle size 104
 peak 4, 9
 capacity 9, 191
 compression 4, 194
 distortion 193
 nonbinding fraction 165
 splitting 193
 volume 12, 209
 peak/noise ratio 8
 pentane 178
 peptide 190, 196
 pesticide 84, 204, 205
 pH gradient 16, 118, 162, 180
 for the Separation of Monoclonal Antibodies 144
 pharmacopoeia method 76, 80
 phenetole 86
 phosphate buffer 146, 150
 piston chamber 64
 piston propulsion technology 93
 piston stroke 45
 piston stroke volume 73
 plate number 10, 13, 16, 104
 polymerization 142
 polyphosphate 135
 postcolumn volume 68, 70
 postmixer 52
 potassium hydroxide 124
 potassium hydroxide eluent 117
 potassium ion 122
 precolumn 206
 precolumn mixing 87
 precompression control 60

premixer 51
 pressure gradient 184
 process control analysis 192
 propanol 117
 proportioning cycle 44, 45
 proportioning valve 42, 43, 51, 61, 69, 95
 protein 141, 168, 196
 retention mechanism 190
 pseudoephedrine 155
 pulsation 56
 pulsation damper 84
 pulse damper 75
 pulse time 69
 pulsed amperometric detection 133
 pulsed amperometry 130
 pump
 binary 43
 block 44, 64
 control 96
 control software 60
 cylinder 51, 52, 60
 fluidics 51
 isobaric 96
 isocratic 97
 quaternary 43
 stroke volume 45
 purge block 54
 purge valve 52
 purging characteristic 78
 Purospher STAR column separation 218

q

QuEChERS extraction 193

r

recondition 178
 reconditioning 207
 re-equilibration 70, 78, 124, 136, 178, 215
 re-equilibration time 207
 reference
 channel 88
 wavelength 88
 reference standard solution 205
 reliability 97

- repeatability 217
 residual pulsation 44, 55, 58, 92
 residual ripple 92
 resolution 10, 22, 23
 retention 11, 16, 64, 77, 91, 150, 178, 186, 190
 time 96
 time precision 196
 volume 96
 retention factor 5
 retention time 103, 107
 reversed-phase chromatography 3, 150, 170, 189, 192
 reversed-phase gradient separation 103
 reversed-phase HPLC 215
 ripple 89, 90
 amplitude 94
 robustness 97
 rotation frequency 47
 run-to-run reproducibility 219
- S**
- salt concentration 162, 166, 170, 178
 salt gradient 141, 178
 salting-out 179
 salting-out effect 170
 sample solvent 193
 screening experiment 189
 selectivity 11, 16, 186
 ion exchanger 116
 selectivity coefficient 114
 selectivity term 5
 separation capability 11
 separation column 86
 separator column
 Dionex IonPac AS15 127
 sialic acid 130
 silica column 179
 silica particle 175
 six-port two-position valve 206
 size-exclusion chromatography 164
 SmartFlow algorithm 84
 sodium hydroxide 117, 124
 sodium perchlorates 179
 sodium tetraborate 124
 solvent 116
 solvent compressibility 75
 solvent effect 86
 solvent gradient 176
 solvent heater 163, 171
 solvent mismatch 193
 solvent selector 98
 source parameter 199
 spike 200
 spin chamber 49
 SpinFlow mixer 55, 57
 standard peak integration 68
 step gradient 71, 162
 stir bar 47
 stroke volume 44, 46, 58
 supercritical fluid chromatography (SFC) 183
 suppressor 120
 suppressor system 136
 sweet spot 219
 synchronization 64
 synchronization effect 69
 system dispersion 192
 system pressure 185
- t**
- tailing 170, 178
 tandem LC-MS approach 208
 targeted screening 194
 taurine 124
 temperature 30, 96
 temperature gradient 179, 185, 215
 tetraborate gradient 124
 throughput bottleneck 206
 total ion chromatogram 198
 triamterene 202
 trifluoroacetic acid (TFA) 49, 88, 90
 trimipramine maleate 155
 triple quadrupole mass spectrometer 191
 trivalent citrate 116
 two-beam optic 88
- u**
- UHPLC system 194
 dispersion 194
 UV detector 53
 UV label 67

v

- valerophenone 82
Van Deemter curve 209, 216
Van Deemter equation 12
Van Deemter theory 48
Vanquish Flex system 82, 85, 86

void volume 207

- volume contraction 58, 60, 61, 97
volume period 56

y

- ytterbium 137