

Index

a

- ABS, *see* alkylbenzenesulfonate
- active pharmaceutical ingredient, *see* API
- activity coefficient 28ff., 50f.
- agar 227ff.
 - industrial manufacture 229
- agaropectin 228
- agarose 228
- alginate 227, 232ff.
- alginic acid 233
 - production of 236
- alkylbenzenesulfonate 56, 62, 65
 - [Amim] 223
- amino acid 29, 33, 44, 49
- anhydrous thebaine alkaloid 265
 - amounts of 266
- antibody separation 148
- antioxidant 278ff., 282
- API 3, 248, 260f., 263f., 266
 - blockbusters 260
 - in plants 5
 - list of 260
 - recovery 7
- application
 - cloud point extraction 78
 - micellar extraction 78
 - reverse micelles 81
- artemisinin
 - Solubility data 63
 - Structure 62
- ATA, *see* anhydrous thebaine alkaloid

b

- baobab 257ff.
- batch 203
 - -cycle 204
- Berthelot–Lorentz rule 31
- beta-carotene 38
 - binary parameter 38

- PC-SAFT (lines) 39
- pure-component parameters 38
- binary interaction parameter 31, 35, 50
- biotransformation 221
 - [Bmim] 56, 59ff., 64, 223
- BMOEA 56, 58, 62f.
- botanicals 269ff., 281ff.
- brand names 274
- 1-butanol 34, 40, 42

c

- carotene 239f.
- carrageenan 227, 230ff., 238
 - alkali-modified flour (AMF) 231
 - ι-carrageenan 230f.
 - κ-carrageenan 230
 - λ-carrageenan 230
 - industrial manufacture 232
 - semirefined (SRC) 231
- cellulose 222
 - crystalline 223
- cephalotaxine 264
- chlorophyll 239ff.
- cholesterol 273, 276, 278f., 281
- cholesterol oxidase 77
- chromatogram 133ff., 147f.
 - of recycling chromatography 142
 - of simulated moving bed fractionation 142
 - reduced 140
 - reduction of 137
- chromatographic separation 140
- chromatography 11
 - carrousel absorbers 23
 - continuous 19
 - – annular 23
 - – SMB 20f.
 - – TMB 20
 - gel 19

- HPLC 126
- ion pair 18
- liquid–liquid (LLC) 18
- liquid–solid 17
- normal phase NP 18, 125
- preparative 136f.
- reversed phase RP 18, 125
- size exclusion 19
- thin layer (TLC) 133
- claim 274
- Disease Risk 276
- Nutrition 275
- cloud point 72f.
- co-current 195
- community list 274ff.
- concentrate of poppy straw 264
- contamination 269, 282
- Counter-current 16, 186, 205
- CP 91ff.
- critical points of some fluid 93
- CPS concentrate of poppy straw 264f.
- amounts of 266
- critical point, *see* CP
- cross-current 205
- crystals 63, 68f.
- crystals
- liquid crystals 68
- turbid liquid anisotropic 68
- CSEP® 23
- curacin A 3

d

- DAD, *see* diode-array detection
- 10-deacetylbaccatin 169f., 262
- decorticating 102f.
- degassing 107
- depolymerization 226f.
- deprotonation 29
- DESIMS 134
- desolventation
- Crown Iron “desolventizer” 216
- digestion 16
- diode-array detection 128, 133f., 162f., 175
- dispersion energy parameter 31f.
- distillation 5, 14, 16
- DL-methionine 34f., 44f.
- PC-SAFT (lines) 44
- DMEA 56, 58, 62f.
- drug-to-extract-ratio (DER) 259

e

- effective diffusion coefficient 97, 99, 193, 197
- EFSA, *see* European Food Safety Agency

- ELSD, *see* evaporating light scattering detection
- [Emim] 56, 58, 60, 62, 64f., 227
- enantiomer 29f.
- enzymatic hydrolysis 223, 237, 240ff.
- equilibrium concentration 188f., 193, 198
- equilibrium constant 29f., 50
- esters 255, 257, 264
- estriol 32, 34ff.
- molecular model PC-SAFT 32
- estrone 34ff.
- European Food Safety Agency 252, 271, 274f., 283, 286
- European Medicines Agency (EMA) 284
- evaporating light scattering detection 133, 138, 162f., 166, 175
- exchangers 19
- amphoteric and dipolar ion 19
- chelating ion 19
- dipolar ion 19
- selective (or specific) ion 19
- extraction 5, 16
- ammonia fiber explosion (AFEX) 224
- batch 16, 195
- CO₂ recycle loop 110
- cold 5, 16
- continuous 16, 195
- conventional 88, 111f.
- counter-current solid 17
- example 191
- extraction yield 99, 102, 111
- liquid–liquid extraction 17
- microwave-assisted extraction (MAE) 186
- of organic substances 61
- oleanolic acid 80
- optimum conditions 83
- organosolv 223
- parameters 109
- pressurized fluid extraction (PFE) 186, 214
- process 149f.
- solid–liquid extraction 15
- Soxhlet 184
- steam explosion 223ff.
- system supercritical fluid extraction (SFE) 185
- technologies 64
- ultrasonic extraction (sonication) 186
- ursolic acid 80
- extractor
- Basket-type 209
- BMA tower 213
- Carrousel 210
- Crown Iron Model IV 209

- De Smet LM-Extractor 211
- DSSE Screw 213
- GEA Niro Contex 212
- Lurgi sliding cell 210
- Naviglio 215
- Percolation 208
- Plug-flow 195
- Pruess Rotary 211

f

- FDA 252
- feed characterization 126, 129, 175
- fermentation 74
- fermentation process 16
- flaking 100ff.
- flavor 87, 89, 104
- flavorings 271f.
- food 269ff., 282, 285
 - additive 228
 - E 406 228
 - E 407 230
 - E400 233
 - E404 233
 - additives 272
 - industry 273
 - matrices 250, 255ff.
 - supplements 270ff., 277f., 285
- fucoidan 235ff.
 - fucoidanase 237
 - α -fucosidase 237
 - structure of 237
- fugacity coefficient 28, 34, 50f.
- functional food 249ff., 255f., 272f., 278
 - benefit areas 255
 - global functional food market 273

g

- gel filtration 19
- gel permeation 19
- Genapol 74, 78f.
- General Food Law 271
- GRAS 252, 257

h

- health claim 272ff., 281, 286
- Helmholtz energy 30ff., 49, 51ff.
- hemicellulose 221ff.
- [HMIM] 56, 58, 60
- HTST conditioning 103, 114ff.

i

- immersion 183f., 202
- indicators 13
- indirubin 77

- international standards 281
- ionic liquids 10, 223
 - BMOEA bst 63
 - cation and anion 57f.
 - [EMIM] 58
 - DMEA oct 63
 - extraction with 56
 - first, second and third generation 58
 - tailor-made 65
 - viscosity 58f.
 - water 59
- irinotecan 261, 263
- isoelectric point 45
- isoflavone 278f., 281

k

- Krafft point 68f.
- Kraft pulping 224

l

- labeling 270, 272ff., 278, 286
- leaching 1, 15f.
- lecithin 67, 71, 74
- lignin 62, 221ff., 238
- lignocellulose 221ff.
 - biotechnological applications 224
 - processing scheme for the biotransformation 222
- linear solvation energy relationships LSER 13
- liposome 70f.
- liquid feed system 108
- liquid-liquid extraction 143
 - columns 154f.
 - decision tree for 154
 - extractors 153
 - parameters 145
- low density lipoprotein (LDL) 256

m

- maceration 16, 183f.
- market 3
 - API 3f.
 - nutraceuticals 3
- market segments 247
- mass spectrometry (MS) 133
- mass transfer coefficient 97ff.
- mass transfer rate 151
- mass transport 99, 113
- medicinal law 270f.
- medicines 270
 - EU legislation 270
 - Traditional Herbal Medicinal Product 270

- melting properties 34
- membrane technology 126
- mesophase 68f.
 - lamellar 70
 - lyotropic 68
- micelle 69ff., 75
 - critical micelle concentration (CMC) 68
 - Formation of 67
- mini-plant technology
 - maceration 162
 - percolation 162
 - plant layout 159
 - scale-down 160
 - Soxhlet 161
 - typical processes 164
- miscibility gap 72, 74, 76
- model-based experimental analysis, MEXA 199

- n**
- natural plants production 4
- natural products 6, 247
 - fashionable, sales in million 249
 - production chain 6
 - timeline development for functional food 253
 - traditional, sales in million 249
- new drug applications (NDA) 259
- Newtonian fluid 59
- Noni-juice 277
- novel food 251, 257, 269, 271f., 276f.
- nutrition claim 273ff.

- o**
- oleanoic acid 6ff.
- oligosaccharide
 - xylo- (XO) 225
- [OMIM] 56, 58, 60
- Oxycodone 264ff.
 - amounts of 266
- Oxycontin® 264

- p**
- packed columns 155
- paclitaxel 77, 169f., 262f.
- paracetamol 40
 - binary parameter 40
 - PC-SAFT (lines) 41ff.
 - pure-component parameters 40
- partition coefficient 59, 74ff.
- PC-SAFT (lines) 36ff., 41f., 47
- percolation 16, 183f., 189, 202ff.
- permitted daily exposure (PDE) 10
 - pH 29, 44f., 49
 - pH partitioning 60
 - aniline 60
 - benzoic acid 60
 - thymol blue 60
 - pharmacopoeia 284
 - phase diagram 45ff., 72
 - lecithin 72
 - nonylphenol polyethoxylene 72
 - Philippines Natural Grade (PNG) 232
 - phyto-extraction 2
 - phytosterol 113ff., 256f.
 - piperine 191
 - calibration curve 192
 - extraction kinetics 193
 - plant ingredients
 - main groups and subgroups of 127
 - vs. solvent polarity 130
 - plant sterols 249, 256f.
 - plant-based extracts 143
 - plants 6
 - from scions 6
 - from sowing 6
 - point 48
 - polymorphs 33
 - polyphenol 113ff.
 - Polyphenon®E Ointment 259
 - polysaccharide 222ff., 226ff., 233, 235, 237f.
 - post-treatment 88, 107
 - pre-treatment 15
 - of natural material 101
 - pre-processing 200
 - recent developments 104
 - *S. lavendulifolia* 15
 - solvent choice 132
 - press cake 102, 114ff.
 - press-dehydration 229f., 232
 - pressing 5, 15
 - process
 - concepts 124
 - design 132f.
 - cost 159
 - development
 - chemical engineering approach for 128
 - general concepts for 126
 - total process development 126, 160
 - - - to detailed engineering 144
 - modeling 171
 - cost 175
 - Processed Eucheama Seaweed (PES) 232

- processes 106
 - high pressure spray process 119
 - impregnation of sprayed particles 106
 - particle generation from saturated solutions (PGSS) 106
- 2-propanol 34, 40, 42
- protonation 29
- pure component 29, 50
 - PC-SAFT parameters 34
- pure solute 27f.
- purification
 - final 139, 169, 171, 174
 - of latent tyrosinase 79
 - pre-purification 137, 139f., 165, 171
 - process scheme for Quassia 165
- quality standardization 283

- q**
- Quassia 164f.

- r**
- racemic mandelic acid 29, 45f., 48
 - PC-SAFT (lines) 47
 - phase diagram 46
- recovery 5, 14
 - flowsheet of sporopollenin recovery 240
 - of enzymes 82
 - protein and myrosinase 82
 - secondary metabolite 5
- residue 8
 - foodstuffs 9
 - in artificial flavored products 9
- reversed micellar (RM) extraction 75
- reversed micellar solution 80ff.
- rolling 100ff.
- RTIL room temperature ionic liquid 57f.

- s**
- safety assessment 283
- sage 6f.
 - cultivation tests 6
- Salvia officinalis* 6ff.
- scCO₂ 87ff., 104ff., 111, 113, 115ff.
- screw pressing 102, 116
- secondary component 145, 147ff.
- secondary metabolite 3, 5
- secondary plant substances 278
- SFE, *see* supercritical fluid extraction 89
 - flow sheet 105
 - of corn germ oil 116
 - Patent applications 90
 - plants 89
 - simplified scheme 108
- sieve plate 153ff., 157f.
- Simulated Moving Bed 20
- sitosterol 34ff.
- SMB, *see* Simulated Moving Bed
- solid bed 95ff., 100
- solid–liquid extraction 181
 - integration into flow sheet 182
 - operation mode 202
- solubility 1
 - of selected substances 94
 - point 47
 - temperature dependence 38ff.
- solubility data
 - correlation 35, 38
 - prediction 35, 42
- solubility parameter 11ff.
- solute 1, 11ff.
- solvatochromic scales 12f.
- solvent 8
 - class 1 9
 - class 2 10, 130
 - class 3 10f., 130
 - classes 33, 40, 49, 61
 - co-solvent 42, 83, 94f., 107, 112
 - commonly used 201
 - desolventation 217
 - green 60, 83
 - harmless solvents 88, 95
 - in food/nutraceuticals 130
 - in pharmaceuticals 130
 - organic 15
 - other 11
 - performance 147
 - polarity 130f.
 - recovery 62, 106, 110, 217
 - selection of 14, 146, 201
 - solvent power 87, 90, 94, 106
 - tailor-made 83
- solvent-to-solid ratio 189
- Soxhlet extraction 16
- special solid-state fermenters (SSF) 226
- sporopollenin 227, 238ff.
 - flowsheet of sporopollenin recovery 240
 - structure of sporopollenin 238
- spray process 118f.
- standard tests 285
- Sterol content 114, 116f.
- Stilbenes 167
- supercritical fluids
 - miscibility of permanent gases in 94
 - phase diagram 91
 - solubility in 94
 - solute concentration *c* 97
 - tunable 93f.

supercritical fluid extraction, *see* SFE
surfactant–water-ratio 75
surfactants
– classification 66
– phosphatide 66
syneresis 229f.

t

targeted screenings 260
Taxol® 168, 179f., 262
– production flowsheet 171
Taxotere® 262
ternary 31, 47f.
terpenes 3f.
– monoterpenes 7
– triterpene 3, 7f.
thebaine 260, 264
– amounts of 266
– quantity (in tons) 265
thin layer chromatography (TLC) 133f.,
136
TMB, *see* true moving bed
tocopherol 116
– enrichment 116
– fractionation 117
topotecan 261, 263
trademarks 274

triterpenic acid 55, 77, 79f.
true moving bed 20
tyrosine kinase inhibitors 264

u

ursolic acid 7f.

v

valerian 104
van der Waals 30f.
Veregen® 260
Vinflunine 262

w

W0 surfactant–water-ratio 75, 80ff.
walnut 134ff.
water–acetone 42f.
water–ethanol 43f.
wellness products 250

x

xanthohumol 116ff.
xylenesulfonate 65

z

zwitterion 29
zwitterionics 65f.