

Ref. 660.294514 EMU

Index

a

A-B-A block copolymer 11, 43, 54
 – PHS-PEO-PHS 43
ab initio emulsion polymerization 209, 217
 absorption spectroscopy 173
 2-acrylamido-2-methyl-1-propanesulfonic acid (AMPS) 252, 281, 283, 286
 acrylic polymer 211
 – butyl acrylate (BA) 211
 – clay nanocomposites 226
 – methyl methacrylate (MMA) 211
 adsorption process 12
 aliphatic epoxides 109
 – dimethylsulfoxide (DMSO) 109
 alkylammonium cation(s) 248, 302
 amino-undecanoic acid (AUA) 250, 256
 – derivatives 250
 ammonium peroxodisulfate (APS) emulsion 268
 – polymerization process steps 268–269
 amphiphilic dextran(s) 111, 116–118, 123, 125
 – derivatives 117, 125
 – emulsifying properties 111
 amphiphilic lipid molecules 229
 – phospholipids 229
 amphiphilic polymer 114, 191
 – block copolymers 191
 – grafted polymers 191
 anionic molecular surfactant 128
 – sodium dodecyl sulfate (SDS) 128
 anionic polymerization 192
 anionic surfactant 174, 177, 278, 281
 – AOT 278
 – SDS 281
 anisotropic metal nanoparticles 157, 167–180, 183
 – inverse microemulsion 157

– preparation 157
 – synthesis 164, 183
 armored latex, *see* clay platelets
 aromatic epoxide 109
 – phenylglycidylether 109
 asymmetric straight-through microchannel array 151
 – schematic illustration 151
 atomic force microscopy (AFM) 59
 Avogadro's constant 14
 azoisobutyronitrile (AIBN) 108, 278
 – 2,2'-azoisobutyronitrile 278

b

Bancroft rule 23, 198, 205
 batch miniemulsion copolymerization 215
 – formulation 215
 B/C network 90, 93
 – decoration of nodes 93
 B/C system 91, 92
 – F_g components 92
 benzoyl peroxide (BPO) 260, 262, 298
 – concentration 260
 blank emulsion latex (BE) 213
 blank miniemulsion latex (BM) 215, 223
 – small-angle X-ray scattering patterns 223
 Bloch's law 259, 307
 block copolymer 192–195, 197–199
 – biocompatibility 194
 – biodegradability 194
 – emulsifier(s) 199, 205
 – micelles 194
 – use 192
 Boltzmann constant 10, 59
 bovine serum albumin (BSA) 129, 145, 146
 Bragg's law 301

- breakdown processes 75
 - coalescence 75
 - flocculation 75
 - Ostwald ripening 75
 - phase inversion 75
- Brownian diffusion 32, 35, 43, 51, 60
- Brownian motion 2, 51, 163
- bubble pressure technique 48
- c**
- calcein-containing W/O emulsions 235
 - fluorescent microphotographs 235
- capping agents 177, 297
- cation-exchange capacity (CEC) 211, 249
- cationic amphiphilic comb-like copolymers 122
- cationic exchange process 249
- cationic surfactant 145, 172, 292
 - cetyl trimethylammonium bromide (CTAB) 145
 - tri-*n*-octylmethylammonium chloride (TOMAC) 145
- ceria nanoparticle 179
 - self-assembly 179
- cerium oxide nanorods 178
 - diagrammatic images 178
 - selected area electron diffraction (SAED) 178
- cetyl trimethylammonium bromide (CTAB) 145, 159, 168, 173, 180, 268, 284
 - concentration(s) 169, 179
 - derivatives 250
 - micelles 172
 - monomers 173
 - surfactant 164
- charge-stabilized emulsions 41
- Chern's study 282
- clay platelets 246, 258, 306
- clay/polymer nanocomposites 260
- Cloisite 30B monomer dispersion 220
 - small-angle X-ray scattering patterns 220
- Cloisite clays 247, 261
- Cloisite inorganic fillers 296
- Cloisite platelet(s) 271, 273, 277, 282
 - polymer-modified 273
- cluster insertion energy 84–90
 - definition 84
- cluster transformation energy 85–90
- coefficient of variation (CV) 133, 233
- cohesive energy ratio (CER) concept 29–31
 - interaction parameters 30
- colloidal forces 249, 304
- colloidal particles 9
 - assessment 201
 - stability 201
- computational fluid dynamics (CFD) 141
 - analysis 141
 - calculations 147
 - method 153
 - results 142
 - simulation 141
 - studies 154
- concentrated emulsions 53
 - viscoelastic properties 53
- coprecipitation reaction 166
- cosmetic emulsions 97
 - application 97
 - physical chemistry 97
 - sensory properties 97
- critical aggregation concentration (CAC) 202, 270
- critical association concentration, *see* critical micelle concentration (CMC)
- critical coagulation concentration (CCC) 202
 - values 202
- critical flocculation concentration (CFC) 40
- critical flocculation temperature (CFT) 40
- critical flotation volume (CFV) 40
- critical micelle concentration (CMC) 14, 15, 69, 169, 173, 179, 263, 305
 - values 271
- critical packing parameter (CPP) 31
- cryo-transmission electron microscopy 279
- cutting-edge semiconductor microfabrication techniques 152
- cycanoacrylate anionic polymerization 127
 - soft-chemistry techniques 184
- d**
- Debye attraction forces 7
- Debye–Hückel parameter 9
- defined nanoparticles preparation 123
 - poly(butylcyanoacrylate) 126
 - poly(styrene) 123
- degree of hydrophobic modification 110
- degree of polymerization (DP) 68, 193
- depletion flocculation 37
 - schematic representation 37
- Deryaguin–Landua–Verwey–Overbook (DLVO) theory 10, 71
 - calculation 71
 - energy-distance curve 10
- dextran 108, 110, 126, 127
 - amphiphilic derivatives 108, 114, 126
 - anionic derivatives 112, 118
 - chains 126
 - chemical modification 110

- coated poly(alkylcyanoacrylate) nanoparticles 126
 - coated poly(butylcyanoacrylate) nanoparticles 129
 - coated poly(styrene) nanoparticles 129
 - native 108
 - T40[®] sample 109
 - diblock copolymers 195
 - applications 195
 - differential scanning calorimetry (DSC) 296
 - diffusion coefficient 22, 38, 116, 122
 - diffusion/stranding mechanism 193
 - dimethylsulfoxide (DMSO) 110
 - ¹H NMR spectrum signals 110
 - dipole-dipole interactions 252, 303
 - disproportionation, *see* Ostwald ripening
 - DNA strands 184
 - dodecane-in-water emulsions 113, 117
 - droplet size 113
 - Ostwald ripening rates 117
 - dodecylbenzenesulfonic acid sodium salt (NaDBS) 254, 283
 - donor-acceptor interactions 297
 - Dougherty–Krieger equation 53
 - droplet deformation 21
 - surfactants role 21–24
 - droplet generation mechanism 136, 144
 - droplet generation rate 147
 - droplets fusion-fission phenomena 161
 - drybase electrorheological (ER) fluids 245
 - dry foams 83
 - dynamic light scattering (DLS) 59, 197, 215, 257
- e**
- edges-to-face agglomeration 220
 - Einstein limit 51
 - electrostatic repulsion 9–11
 - emulsification devices 133
 - high-pressure homogenizers 133
 - rotor-stator systems 133
 - emulsification mechanism 16–18, 24
 - emulsification process 17–19, 112, 133, 135, 138, 139, 144, 146, 150, 192, 195, 203, 205
 - aspect ratio 139
 - asymmetric straight-through MC array 150
 - channel shapes effect 139
 - emulsifiers effect 144–146
 - experimental set-up 138
 - schematic illustration 135
 - surfactants effect 144–146
 - symmetric straight-through mc arrays 139, 144
 - to-be-dispersed phase flux effect 148
 - to-be-dispersed phase viscosity effect 146
 - emulsification set-up 137–139
 - emulsified fluid foundation 97
 - play-time 97
 - emulsifier-surface interactions 153
 - emulsifiers selection 25
 - emulsion aging rate 116, 118
 - mechanism 116
 - polymerization conditions 118
 - emulsion breakdown processes 1, 5, 6
 - coalescence 3, 6, 43–46
 - creaming 2
 - flocculation 3, 6
 - free energy path 6
 - Ostwald ripening 3, 6
 - phase inversion 3
 - schematic representation 2, 6
 - sedimentation 2
 - thermodynamics 5–7
 - emulsion droplet(s) 7, 8, 108, 142
 - generation 142
 - interaction energies 7–12
 - size measurement 108
 - emulsion films stabilization 67, 68
 - correlation 67
 - emulsion stability 67
 - interaction forces 67
 - emulsion flocculation mechanism 38–41
 - electrostatically stabilized emulsions 38
 - emulsion formation process 5, 6, 17, 19
 - schematic representation 6, 17
 - surfactants role 19
 - thermodynamics 5–7
 - emulsion polymerization process 226, 266, 271, 279, 281, 284, 285
 - emulsion polymerization route 210
 - advantage 210
 - emulsion rheology 53
 - droplet deformability influence 53
 - emulsions 1, 3
 - catastrophic inversion 45
 - classification system 1
 - flocculation 37
 - industrial applications 3, 4
 - oil-in-oil (O/O) 1
 - oil-in-water (O/W) 1
 - preparation 58, 108
 - sedimentation process 32–37
 - sedimentation rates 33, 34
 - stability 201, 202
 - transitional inversion 45
 - types classification 2
 - water-in-oil (W/O) 1

- emulsions creaming 32–37
 - prevention 35–37
 - schematic representation 33
 - emulsion selection 31
 - critical packing parameter 31
 - emulsions rheology 46
 - bulk rheology 50
 - concentrated emulsions rheology 51
 - interfacial dilational elasticity 47, 48
 - interfacial dilational viscosity 48
 - interfacial rheology 46, 47
 - interfacial viscosity measurement 47
 - non-newtonian effects 49
 - emulsion stability investigation 59
 - using INUTE[®] SP1 59, 60
 - emulsion systems 4
 - physical chemistry 4, 5
 - entrapment yield determination 232
 - epoxides 107, 109
 - aliphatic 107, 109
 - aromatic 107, 109
 - ethylene glycol (EG) 175
 - ethylene oxide (EO) units 15
 - European synchrotron radiation facility (ESRF) 216
- f**
- facial make-up 97
 - emulsified fluid foundation 97
 - Fanning's friction factor 136
 - film pressure balance technique 69
 - flocculation kinetics 38, 39
 - flocculation process 36
 - flocculation rate 40
 - Flory–Huggins interaction parameter 11
 - fluffy structure 306
 - foam film destabilization 80
 - food emulsions 3
 - foundation bulk drying 99
 - foundation D 102
 - drying 99, 100
 - viscosity/evaporated mass curve 102
 - foundation jams 103
 - fragmentation process 90
 - free polymer 37
 - free radical reactions 306
- g**
- γ -gradient 22, 23
 - gas chromatography (GC) 99
 - gas constant 20
 - gel-permeation chromatography (GPC) 212, 218
 - gel polymer formation 222
 - gel-sol method 165
 - giant vesicles (GVs) 229, 234, 236, 238, 240
 - average diameters 236
 - diameter 241
 - entrapment efficiency 229
 - mechanical stability 238
 - membranes 229
 - microphotographs 234
 - preparation characteristics 229
 - size control 229, 234
 - structure 236
 - suspension 232
 - giant vesicles formation 231–232, 239, 240
 - characteristics 237
 - schematic flowchart 239
 - giant vesicles preparation process 233, 238
 - monodisperse W/O emulsions 233
 - Gibbs adsorption equation(s) 14, 15, 20
 - Gibbs adsorption isotherm 13–16
 - Gibbs approach 13
 - Gibbs–Deuhem equation 5, 13
 - Gibbs dividing line 4
 - Gibbs elasticity 43, 44, 47, 48, 62
 - Gibbs free energy 13
 - Gibbs–Marangoni effect 23, 24
 - schematic representation 23
 - Gibbs model 4
 - gold nanoparticles 168
 - graft copolymer 76
 - gram-scale synthesis 183
 - gravitational field system 90
 - evolution 90
 - gravity force 93
- h**
- Hamaker constant 8, 12, 38, 50, 71
 - Hansen solubility parameters 301
 - Harkens spreading coefficient 79
 - hexadecyltrimethylammonium bromide (HDTMAB) 249
 - hexane continuous-phase removal process 240
 - high-internal-phase emulsions, *see* dry foams
 - high-molecular-weight polymers 35
 - high-molecular-weight surfactants 28
 - high-speed stirrer(s) 16, 18, 58, 76
 - colloid mills 18
 - high pressure homogenizers 18
 - Silverson mixer 16
 - ultrasound generators 18
 - Ultra-Turrax 16, 18, 58, 76
 - homogeneous nucleation 269
 - homogenization/degradation mechanism 266

- HPPS instrument 59, 108, 109
 hydrating shower cream 77, 79, 80
 – compositions 77
 hydrogenated tallows (HTs) 248
 hydrogen-bonding component(s) 301, 303
 hydrophilic block copolymer 200
 hydrophilic chains, *see* PEO chains
 hydrophilic-lipophilic balance (HLB)
 concept 25–27
 hydrophile-lipophile balance (HLB) number(s)
 23, 26–28, 29, 46, 197, 198
 – chemical structure 198
 hydrophilic-lipophilic balance (HLB)
 value(s) 27, 28, 263
 hydrophilic molecule entrapment 234
 hydrophobically modified dextrans
 synthesis 109–111
 hydrophobically modified inulin (HMI)
 43, 57, 58, 65, 81
 – INUTEK[®] SP1 43, 57, 58, 65, 81
 hydrophobic clay platelets 220
 2-hydroxyethyl methacrylate (HEMA) 280
- i**
- incipient flocculation 40
 inner-sphere sites 294
in situ polymerization 283
 interdroplet mass transfer 265
 interfacial dilational modulus 21
 interfacial rheology correlation 49
 – emulsion stability 49
 – mixed surfactant films 49
 – protein films 49
 interfacial tension 19, 47, 85, 86
 – definition 86
 – gradient 21
 intermicellar exchange rate 166
 intermicellar interactions 183
 INUTEK[®] SP1 57, 60–63, 69, 73, 76, 79–81
 – adsorption 79
 – application(s) 57, 81
 – concentration 69
 – conformation 79
 inverse emulsion(s) 278, 280
 – polymerization 280
 – stabilization mechanism 278
in vivo drug carriers 158
 ionic stabilizer 180
 – CTAB 180
 ionic surfactant(s) 9, 14, 15
 – sodium dodecyl sulfate (SDS) 14
 isotropic metal nanoparticle(s) 157, 166,
 167, 179
 – inverse microemulsion 157
 – preparation 157
 – synthesis 164
- k**
- Karl Fischer coulometer 232
 Karl Fischer method 99
 Keesom attraction forces 7
 kinetic exchange process 44, 160
 Kolmogorov theory 237
- l**
- laminar flow (LV) 18, 19
 – laminar/viscous regimes 19
 – turbulent/inertial regimes 19
 – turbulent/viscous regimes 19
 Laplace's law 237
 Laponite composite system 246
 latex suspensions 128
 – colloidal properties 128
 Leica DMLB optical microscope 99
 Lewis acids 305
 Lifshitz–Slesov–Wagner (LSW) theory 61
 light-scattering measurements 221, 265
 light-scattering techniques 196
 lipid hydration process 232
 liquid foundations characterization
 methods 98, 99
 – characterization methods 98, 99
 – drying rate determination 99
 – flow rheology 99
 – foundations drying 99
 – selection 98
 liquid/liquid interface 46
 London dispersion constant 7, 8
 London dispersion interactions 7, 8
 L/W ratio 237, 238, 240
- m**
- macromolecular surfactants 29
 magnetic nanoparticles 182, 184
 magnetic resonance imaging (MRI)
 agents 182
 MALDI-ToF mass spectrometry 196
 Marangoni effect 22
 Mark–Houwink–Sakurada constants 216
 massage lotion 76–79
 – compositions 77
 – formulation 76–79
 membrane emulsification technique 134
 membrane lysis tension 237
 metal nanoparticle(s) 167, 181, 183
 metal nanoparticles preparation method 158
 – chemical reduction 158
 – coprecipitation 158

- metal particles formation 162
 - mechanism 162
 - metal salt/precursor 165
 - Co(AOT)₂ 165
 - methyl methacrylate (MMA) 218, 252, 254, 260, 270, 274, 287
 - dispersion state 254
 - monomer 218, 287
 - polymerization 260, 274, 287
 - suspension polymerization 270
 - micellar systems 263–281
 - radical polymerization 263
 - micellar template mechanism 168, 169
 - parts 170
 - micelle 263
 - aggregates 271, 305
 - nucleation 268, 269, 282
 - rod-like structures 179
 - schematic illustration 263
 - template-based primary nanorods 179
 - template growth 168
 - template mechanism 170
 - microchannel array (MC) 134–137, 139, 151, 153
 - devices 139
 - plate(s) 144, 231, 233
 - microchannel emulsification
 - devices 134
 - principles 135–137
 - process 134–136, 230, 231
 - study 146
 - microchannel module 230
 - microemulsion polymerization
 - mechanism 264, 265
 - microemulsion(s) 159, 178, 180, 181, 264, 273, 306
 - based approach 179
 - droplet dimensions 160
 - mediated synthesis process 177, 180
 - microwave method 181
 - polymerization 273, 306
 - production 158
 - reduction technique 182
 - role 264
 - system 167, 169
 - technique 179
 - microfluidic channel devices 134, 229
 - microinterferometric technique 68
 - microscope video system 232
 - miniemulsion aging rate 122
 - temperature effect 122
 - miniemulsion polymerization
 - processes 114, 115, 120, 124, 129, 210, 211, 219, 267, 276
 - mechanism 114, 267
 - miniemulsions stability 114
 - polymerization duration 114
 - molecular diffusion process 122
 - molecular surfactants 118
 - sodium dodecyl sulfate 118
 - molecular weight distribution (MWD) 216
 - monodisperse emulsion(s) 133, 139, 140, 148, 151
 - production developments 133
 - monodisperse water-in-oil (W/O) emulsions 229, 230, 233
 - monomer-coemulsifier interactions 264
 - monomer droplets composition effect 119
 - monomer polymerization 270
 - monomer-swollen micelles 269
 - montmorillonite (MMTs) 219, 225, 243
 - clays 209
 - platelets 225
 - multiple emulsion(s) 57, 64
 - INUTE[®] SP1 63, 64
 - optical micrographs 64
 - preparation methods 58
 - stability 64
- n**
- nanocomposite latex films 215, 219, 223–225
 - transmission electron microscopy images 219, 224, 225
 - wide-angle X-ray diffraction patterns 224
 - nanoemulsions 57
 - emulsions stabilization 57, 60
 - using INUTE[®] SP1 60
 - nanoemulsions preparation methods 58, 191
 - poly(caprolactone)-*b*-poly(ethylene oxide) block copolymers 191
 - spontaneous emulsification 191
 - nanometer-scale magnetic particles 158
 - nanoparticle formation process 163
 - steps 163, 164
 - nanoparticle growth 172
 - kinetic parameters 172
 - nanoparticle preparation 107, 162–164, 179
 - key parameters 179
 - miniemulsion polymerization 107
 - nanoparticle suspensions 129
 - colloidal properties 129
 - nanoprecipitation process 193, 198
 - nanorods 170, 179
 - self-assembly 179
 - nanoscale magnetic materials 183
 - physical properties 183
 - nanoscale particles 157, 167
 - properties 157, 158

- natural clay 248, 302
 natural Cloisite (Cl_N) 258, 294
 negatively stained nanocomposite latexes 225
 – transmission electron microscopy images 225
N,N'-methylene diacrylamide (NDA) 278
 nonadsorbing polymer. *see* free polymer
 nonionic surfactant(s) 11, 15, 26, 27, 46, 278
 – alcohol ethoxylates 15
 – Span 80 278
 – Tween 85 278
 nonseeding method 170, 183
 nuclear magnetic resonance (NMR) 294
 nucleation-growth kinetics 172
 nucleation/growth mechanism 193, 211
- O**
- oil emulsions 203
 – emulsification process 197
 – spontaneous emulsification 203
 oil-in-water (O/W) dispersions 191
 – emulsions 191
 – latexes 191
 – suspensions of polymer 191
 oil-in-water (O/W) emulsion(s) 23, 27, 28, 32, 34, 52, 107, 108, 123, 129, 143, 146, 148, 193, 200
 – activation energy 123
 – droplet generation 143
 – interfacial tension variation 28
 – sonication 108
 oil-in-water (O/W) interface 42, 44, 49, 51, 65, 68, 78, 141, 143
 – time course 143
 oil-in-water (O/W) miniemulsions preparation 111
 – droplet size control 111
 – polymer structure 112
 oil-in-water (O/W) system 31, 136, 145–147, 151, 153
 – interfacial properties 145
 – isoelectric points 146
 – preparation conditions 145
 organically modified clays (O-MMT clay) 213, 214, 284
 – wide-angle X-ray diffraction patterns 213
 organically modified silicates (OLS) 247, 280
 organic latex particles 246
 oscillating bubble technique 48
 Ostwald ripening 3, 41–43, 61, 63, 107, 116, 122, 265
 – rate 117, 120, 123
 – rate constant 62
 – schematic representation 42
- P**
- particle aggregation process 102
 peanut-like hematite (α -Fe₂O₃) crystals 165, 176
 – synthesis 165
 Pearson's hard-soft acid-base (HSAB) principle 297
 percolation process 161
 personal-care formulations 75, 76
 – hydrating shower cream 76
 – massage lotion formulation 76
 – polymeric surfactants 75
 – soft conditioner 76
 – sun spray (SPF19) 76
 phase inversion process 45, 46
 – catastrophic inversion 45
 – transitional inversion 45
 phase inversion temperature (PIT) concept 27–29
 – value 29
 photon correlation spectroscopy, *see* dynamic light scattering
 pickering emulsion(s) 246, 279, 306
 – stabilization 273, 284
 plateau angles 84
 plateau value 20, 22
 play-time 97, 104
 – definition 97
 Poisson-Boltzmann equation 71
 polar polymer 304, 305
 – PEO 304
 – polysaccharides 304
 polyacrylamide (PAAm) latex particles 279
 polycaprolactone (PCL) 193, 195
 – block 205
 – chain 200
 – emulsification process 193, 195
 – emulsions fabrication 197, 198
 poly(caprolactone)-*b*-poly(ethylene oxide) block copolymers (PCL-*b*-PEO) 193, 196, 198, 203, 204
 – properties 204
 – synthesis 196
 polydimethylsiloxane (PDMS) emulsions 53
 – η - ϕ curves 53
 polydisperse emulsion 140, 149
 polydispersity index (PDI) 217, 222, 279
 poly(ether-block-amide) copolymer hybrids 289
 – X-ray diffraction patterns 289

- polyethylene-block-poly(ethyleneglycol)
 - (PE-PEG) thin film nanocomposites 293
 - polyethylene oxide (PEO) 26, 54, 60, 193, 293, 294, 296
 - A-B-A block copolymer 54
 - block copolymers 195
 - block length 200
 - block(s) 197, 199, 204, 205
 - chain(s) 11, 15, 29, 46, 199, 202, 293
 - Cloisite composite 295
 - conformations 296
 - layer 202
 - matrix 295
 - nanocomposites 293–296
 - polyethylene glycol (PEG)-grafted silicones 191
 - methyl ether 196
 - polymer chain conformation 244, 277
 - polymer chain encapsulation 261
 - polymer/clay nanocomposites 209, 243, 245, 291
 - polymer/clay nanocomposites formation 303
 - mechanistic routes 303
 - polymer/Cloisite nanocomposites 252, 303
 - polymer film formation process 210
 - polymeric emulsifier(s) 198
 - chemical structure 198
 - polymeric nanoparticles 107, 108
 - miniemulsion polymerization 108
 - polymeric surfactant(s) 20, 21, 57, 61, 63, 68, 75, 80, 107, 115, 122, 123, 126, 191, 192, 195, 205
 - biocompatible 107
 - mixtures 21
 - polyvinyl alcohol 20
 - polymerization process 108, 114
 - polymerization system(s) 269, 273
 - polymer latexes 243
 - preparation 243
 - stabilized by clays 243
 - polymer-layer silicate nanocomposites (PLSN) 245
 - polymer matrix 209–211, 244, 302, 306
 - polymer/MMT nanocomposites 281–296
 - copolymers 288
 - kinetic/molecular weight parameters 281
 - poly(ethylene oxide) nanocomposites 293–296
 - thermal/mechanical properties 290
 - X-ray diffraction studies 284
 - polymer particle formation 268
 - micellar model 268
 - polymer particle(s) 276, 283, 306
 - matrix 285
 - polymerization rate 276
 - stabilization 275
 - polymer/silicate nanocomposites 243, 244
 - polymer-to-oil surfactant 111, 112
 - droplet diameter 112
 - poly(methyl methacrylate) (PMMA) 245
 - chains 288, 299, 300
 - clay nanocomposites 245
 - modified silicate layers 284
 - nanocomposites 288, 290–293
 - wide-angle X-ray diffraction (WAXD) analysis 288
 - polysaccharide derivatives 115
 - amphiphilic polymers 115
 - polysaccharide surfactants 109
 - polystyrene(Pst) 290
 - clay nanocomposites 244, 245
 - Cloisite nanocomposite 290
 - poly(styrene-co-acrylonitrile) (SAN) 281
 - copolymer 281
 - silicate nanocomposites 281
 - polyvinyl alcohol (PVA) 20, 205, 298
 - concentrations 205
 - protein film 49, 50
 - creep curve 50
 - pseudoplastic system, *see* shear thinning system
 - pulsed drop method 48
- q**
- quantum-size effects 297
 - quasi-monodisperse emulsion droplets 149
 - quasi-plateau 101
- r**
- radical polymerization process 260–281
 - reactions 123
 - solution/bulk polymerization 260–263
 - radical polymerization theory 260
 - rapid coagulation regime 202
 - redox system 263, 305, 306
 - reducing flocculation 41
 - general rules 41
 - reverse micelles 170, 179
 - synthesis 158, 182
 - system 160
 - water pool 163
 - reversible addition-fragmentation chain transfer (RAFT) agents 120
 - Reynolds number 18
 - rod-like micelle template mechanism 171

- 5**
- scanning electron microscopy (SEM) 279
 - Scatchard equation 113
 - seeded semibatch emulsion
 - copolymerization 213, 214, 217
 - formulation 214
 - seeding/autocatalytic growth mechanism 164
 - selected area electron diffraction (SAED) 177
 - self-assembly process 177
 - semi-quantitative theory 19
 - shear thinning system 35
 - shirasu porous glass (SPG) membranes 133
 - size-exclusion chromatography (SEC) 216
 - skin foundation 102
 - disposition 102
 - play-time 102
 - slow coagulation regime 202
 - small-angle light scattering (SALS) 197
 - small angle X-ray scattering (SAXS) 209, 216, 220, 221
 - experiments 216
 - measurements 220
 - scattering profile 221
 - Smith–Ewart theory 268
 - Smoluchowski rate 39
 - sodium bis(2-ethylhexyl)sulfosuccinate (NaAOT) 159, 160
 - containing microemulsion solution 175
 - containing microemulsion system 174, 180
 - microemulsions 177
 - sodium dodecyl sulfate (SDS) 23, 49, 268, 271
 - ϵ -values 23
 - micelles 254, 304
 - sodium lauryl sulfate (SLS) 211
 - sodium montmorillonite (Na-MMT) clay 209, 212, 224
 - chemical structure 212
 - WAXD diffraction patterns 224
 - soft conditioner 77, 80
 - compositions 77
 - soft template effect 177
 - sol-gel methods 181
 - sorbitan mono-oleate 27, 230
 - Soxhlet extraction 216
 - spontaneous emulsification process 193, 198
 - stabilization process 75
 - enhancement 75
 - steric repulsion 11, 12
 - steric stabilization process 38, 57
 - steric stabilization theory 12
 - sterically stabilized emulsions flocculation 40, 41
 - schematic representation 40
 - Stern/zeta potential 9
 - stirred-tank reactor 213
 - Stokes–Einstein equation 38, 59
 - Stokes' velocity 34
 - straight-through microchannel array devices 133, 135, 137–139, 146, 148–150, 152–154
 - scaling-up 149, 150
 - straight-through microchannel plate 138, 149, 150, 153
 - styrene 115, 244, 245, 270, 275, 285, 286
 - colloidal parameters 275
 - emulsion polymerization 285, 286
 - emulsion retardation factor 121
 - emulsion(s) 119, 121
 - free-radical miniemulsion polymerization 115
 - *in situ* polymerization 244, 245
 - microemulsion polymerization 275
 - miniemulsion kinetic data 115
 - miniemulsion polymerization 270
 - vinyloxazoline copolymer 245
 - submicronic colloidal systems 107
 - domains 107
 - sun spray (SPF19) 77, 81
 - compositions 77
 - supra-aggregate 178–180
 - formation 178, 180
 - self-assembly 179
 - surface dilational modulus 22, 42
 - surface viscometers 47
 - schematic representation 47
 - surfactant-based methods 164–166
 - surfactant film(s) 44, 163
 - surfactant molecules 12
 - orientation 12
 - surfactant replacement process 232
 - surfactants adsorption 12–25
 - liquid/liquid interface 12
 - swallow-tail family 289
 - P15A 289
 - P20A 289
 - P93A 289
 - symmetric bulk crystal structures 167
 - synthetic Cloisite (Cl_S) 259, 294
- f**
- tallow chains 248
 - template mechanism 172
 - thermogravimetric analysis (TGA) 288

- three-phase cellular fluids 83
- external force field effect 83
- transformation energy(ies) 88, 89
- transmission electron microscopy (TEM)
 - 174, 217, 218
 - images 174, 218
- tri-*n*-octylmethylammonium chloride (TOMAC) 145
- tris-HCl buffer(s) 230, 232
- Triton X-100 solution 232, 233
- turbulent flow (TV) 18, 19
- turbulent inertial regime 19

- u**
- Ultra-Turrax homogenizer 58
- ultraviolet (UV)-visible spectra 172

- v**
- van der Waals attraction 7–10, 37, 38, 40, 43, 67, 128, 253, 254, 302
 - types 7
- van der Waals energy-distance curve 8
- velocity gradient 19
- vibrating sample magnetometer (VSM) 259
 - data 259
- vinylbenzyl-dimethyldodecylammonium chloride (VDAC) 249
- vinyl monomers 278
 - emulsion polymerization 278
- viscosity evolution 100–102
 - drying time 101
- viscosity plateau, *see* quasi-plateau

- w**
- waterborne acrylic/clay nanocomposites 209
 - synthesis routes 209
- waterborne nanocomposites 210, 217, 219
 - coagulum-free 210
 - emulsion polymerization 213, 217
 - latexes 214
 - miniemulsion polymerization 214
 - MMT nanocomposites synthesis 213, 214
- water-borne polymers 267
 - clay nanocomposites 210
 - preparation 267
- water-in-oil emulsion(s) 45, 46, 58, 59, 64, 230, 234, 236, 241
 - Arlcel P135 58, 59, 64
 - preparation 230
- water-in-oil emulsion water droplets 235
 - size distributions 235
- water-in-oil microemulsion(s) 159, 161, 181
 - sol-gel route 181
 - use 161
- water-insoluble materials 266
 - organic pigments 266
 - polymers 266
 - resins 266
- water/oil-soluble polymers 260
- water-soluble fluorescent dye 230
 - calcein 230
- water-swollen micelles 264
- wide-angle X-ray diffraction (WAXD) 212
 - analysis 216, 288, 292
 - diffraction patterns 218, 219
- WinROOF image analysis software 232
- Winsor R_o concept 29
- worm-like micelle template 169

- x**
- X-ray diffraction patterns 250, 253, 284
- X-ray diffraction spectra 255
- X-ray diffraction studies 284
 - homopolymers 284
- X-ray diffraction (XRD) analysis 212, 255

- z**
- zeolite nanocrystals 181
- zwitterionic polymerizations 126