

# Index

## A

Adhesive friction 219  
Adsorption–repulsion model 219  
Aggrecan 216  
Alginate 231  
Amonton’s law 216  
Artificial organs 204

## B

Bacterial cellulose (BC) 214  
Biotissues 203  
Block copolymers 6  
Blood blots 204  
Bovine fetal aorta endothelial cells (BFAECs) 232  
Brillouin light scattering (BLS) 41  
Brownian hard spheres 72  
Brownian motion 2, 22, 57, 62, 71, 170, 188, 191  
Brownian particles 55, 60  
Brownian suspensions, non- 175, 188

## C

Cage effect 74, 86  
Cages 126  
Carrageenan 215, 218, 227  
Cartilage, artificial 203, 236  
  cells 216  
Cell scaffold 203  
Cell spreading/proliferation 235  
Cellulose 214  
Centroiding algorithm 180  
Chitosan 231  
Clay-polymer hybrids 36  
Colloidal dispersion 1, 55, 163  
Colloidal gels 3  
Colloidal glasses 1, 119, 165

Colloidal-like particles 120  
Confocal imaging 163  
Confocal microscopy 172  
Core-corona 21  
Core-shell particles 169  
Correlated image tracking (CIT) 183  
Crystallization 27  
Cycloheptylbromide (CHB) 169

## D

Daoud–Cotton density 6, 16  
Decahydronaphthalene/tetrahydronaphthalene 169  
Density correlator 70  
Density fluctuations 68  
Diblocks 6  
Diffusion dynamics 12  
Dioctadecyl-tetramethylindocarbocyanine (DiIC18) 168  
Double network 203  
Double-network hydrogels 205  
Drug delivery/release 43, 122, 125  
Dynamic light scattering (DLS) 21  
Dynamics 1

## E

Elasticity 120, 125, 129, 217, 220, 239  
  emulsion droplets 125  
Elastohydrodynamic interactions 117  
Elastohydrodynamic slip 148  
Emulsion droplets, elasticity 125  
Emulsions 8, 43, 124, 171  
Equilibrium 68  
1-Ethyl-3-(3-dimethylaminopropyl) carbodiimide hydrochloride (EDC) 215  
Ethylacrylate 122

**F**

Fast channel flow, fluids/pastes 189  
 Fibronectin 231  
 Flow curve 55  
 Flow geometries 173  
 Fluid-to-glass transition 57  
 Fracture energy 212  
 Friction 203  
   reduction 225

**G**

Gel friction 217  
 Gelatin 214, 237  
 Gellan 217, 227  
 Glass transition 1, 55, 163  
   shear moduli 76  
 Glasses 3  
   colloidal 119  
 Grafted particles 1  
   colloidal 7  
 Grafting density 8  
 Green–Kubo relations 62

**H**

Hairy particles 1  
 Hard glasses 118, 167  
 Hard-sphere colloids 193  
 Herschel–Bulkley equation 149, 190  
 Hookian spring constant 57  
 HUVEC density 235  
 Hyaluronic acid 231  
 Hydrodynamic interactions 72  
 Hydrodynamic slip 148  
 Hydrogels 203  
 Hydroxy stearic acid (HSA) 7  
 Hysteresis 209

**I**

Integration, transients approach 55  
 Integrations through transients (ITT) 59, 73  
 Isotropically sheared hard spheres model  
   (ISHSM) 89

**L**

Laminin 231  
 Laponite 121  
 Liposomes 124  
 Load dependence 216  
 Lubricating film 145, 151  
 Lubrication 73, 140, 144, 151, 189, 216, 225,  
   239

**M**

MCT-ITT 59  
 Metal ion adsorption 122  
 Mica in nylon 36  
 Micelles 1, 21, 171  
   block copolymers 6  
 Microgels 8, 122  
   particles 8  
 Mode coupling closure 71  
 Mode coupling theory (MCT) 55, 59, 187  
 Model soft spheres 4  
 Mooney–Rivlin law 129  
 Mucus 228  
 Multilamellar vesicles 124

**N**

Nanoparticle-polymer hybrids 1  
 Nanoparticles, dispersion in polymer matrices  
   37  
 Near equilibrium 131  
 Necking 209  
 Network particles 122  
 Newtonian viscosity 57  
 7-Nitrobenzo-2-oxa-1,3-diazole-methyl  
   methacrylate (NBD-MMA) 168  
 Non-equilibrium stationary state 55  
 Nonergodicity 118, 126

**O**

*n*-Octadecyl alcohol 7  
 Osmotic pressure 136

**P**

PAMPS/PAAm DN gels 205  
 Particle imaging velocimetry (PIV) 170, 178  
 Peclet number 63, 107, 189  
 PEP–PEO star-like block-copolymer micelles  
   21  
 Percus–Yevick (PY) approximation 72  
 Phase diagrams 1  
 Phospholipids 124  
 PMMA-coated silica particles 24  
 PMMA-PHS 184  
 PNIPAM 9, 80, 106, 122, 231  
   coated PS latex 32  
   particles 9  
 Poly(2-acrylamido-2-methyl-1-  
   propanesulfonic acid) (PAMPS)  
   205  
 Poly(acrylic acid) (PAA) 122, 232  
 Poly(butadienyl)lithium 4  
 Poly(butyl methacrylate) 7

- Poly(*N,N'*-dimethylacrylamide) (PDMAAm) 234  
 Poly(dimethyl siloxane) 7  
 Poly(ethylene glycol) (PEG) 7, 231  
 Poly(ethylene oxide) (PEO) 7, 229, 231  
 Poly(ethylene propylene)/poly(ethylene oxide) 6  
 Poly(2-hydroxyethyl methacrylate) (PHEMA) 228  
 Poly(*N*-isopropylacrylamide) (PNIPAM) 9, 80, 106, 122, 231  
 Poly(methyl methacrylate) (PMMA) 7, 121, 122, 167, 190, 226  
 Poly(NaAMPS-*co*-DMAAm) 234  
 Poly(propylene oxide) (PPO) 7  
 Poly(sodium 4-styrenesulfonate) (PNaSS) 228  
 Poly(vinyl alcohol) (PVA) 223, 229, 231  
 Poly(*N*-vinylcaprolactam) 122  
 Poly(2-vinylpyridine) (P2VP) 39, 122  
 Polybutadiene 6, 20  
   stars 4, 20  
 Polydimethylsiloxane 121  
 Polydisperse dispersion, asymptotics 102  
 Polydispersity 5, 20  
 Polyelectrolyte brushes 226  
 Polyelectrolyte microgels 10  
 Polyethylene 226  
 Polyethylene oxide 121  
 Polyisoprene 6  
 Polyelectrolyte microgels 123, 127  
 Polymer–colloids 117, 123  
 Polymer-grafted silica 7  
 Polypropylene 226  
 Polysaccharide gels 227  
 Polystyrene (PS) 5, 7, 121, 226  
 Polyurethane-PMMA 8  
 PS-P2VP 39  
 PS-poly(ethyl propylene) (PEP) 38  
 PVC 226
- R**
- Refractive index (RI) 21, 40, 44, 167, 169  
 Relaxation 119  
 Reptation 29  
 Repulsion–adsorption 219  
 Rheology 1  
   nonlinear 117, 163  
 (Rhodamine isothiocyanate) aminostyrene (RAS) 168
- S**
- Sample area dependence 218  
 Self-consistent-field-theory (SCFT) 21
- Shear moduli 55, 57, 76, 136  
 Shear rheology 148  
 Shear thickening 171  
 Shear thinning 117  
 Slip regimes 141  
 Small angle neutron scattering (SANS) 18  
 Small angle X-ray scattering (SAXS) 18, 213  
 Smoluchowski operator 61  
 Soft colloids 1  
   glassy state 29  
 Soft glasses 118  
 Soft lubrication 144  
 Softness 1, 3  
   tunability 11  
 Solvent friction 60  
 Solvent-particle interactions 72  
 Stars 1, 131  
   colloidal 1, 4, 18, 120  
   interactions 12  
 Steady shear 55  
 Stearyl alcohol 7, 121  
 Stokes–Einstein–Sutherland diffusion coefficient 61  
 Strength 203  
 Styrene sulfonate 226  
 Surface force apparatus (SFA) 226  
 Surface rheology 140, 142  
 Synovial fluid 228
- T**
- Tetrafluoroethylene (Teflon) 219, 226  
 Toughness 203, 206, 214  
 Tracking algorithms 181  
 Triblocks 6  
 Triton X-100 138
- U**
- Ultrahigh molecular weight polyethylene (UHMWPE) 237
- V**
- Viscoelasticity 34, 59, 80, 205, 238  
   linear 55, 89, 117  
 Vitriification 28
- W**
- Wall slip 117, 140
- Z**
- Zwanzig–Mori type equation of motion 71, 95