Subject Index

A

Acrylic bone cement failure, 38
Adsorption, human plasma, 150, 153(table)
Animal models, 28, 111, 118, 189
Animal testing, 177
Anterior cruciate ligament prostheses, 189
Antibodies, 200
Anticollagenase antibody, 200
Arthroplastic materials—adsorption, 150, 153(table)
Arthroplasty
components failure mechanism, 7, 38
endosteal osteolysis, 61
implant materials, 90
loosening, 27, 111
revision surgeries, 27
Aseptic loosening, 38, 127, 136

B

Barium sulfate, 127
Biocompatibility
human plasma adsorption, 150
particulate recovery, 68
polymethyl methacrylate debris, 118
polymethyl methacrylate with/without barium sulfate, 127
Biomaterials
bone lysis, 136
debris, 11-12(tables) 27
human plasma adsorption, 150
Bone
reaction patterns—implant materials, 90, 111
Bone cement, 143
Bone loss, 61
Bone lysis, 7
Bulk, 111

C

Calcium hydroxyapatite
as implant coating, 90
Canine, 189
Carbon-fiber composite ligaments, 90
Cement debris, 8
Cemented arthroplasty, 90
Cementless arthroplasty, 90
Cementless hip replacement, 52
Clinical trials, 143
Coating for implants, 90
Cobalt implant alloys, 177
Co-Cr-Mo alloy, 161
Collagenase, 200
Composite materials, 90
Cruciate ligaments, 200

D

Debris from implants
biocompatibility, 127
erosion, 7
defensive barrier, 90
overview, 1
polymethyl methacrylate, 127
spectroscopy analysis, 68

E

Endosteal osteolysis, 52, 61
Erosion
cementless hip replacement, 52

F

Failed implants
aseptic loosening, 38, 127
overview, 1
Failure mechanism, 75
Fibroblasts, 136, 143
Fluorescence, 200
Foreign-body reaction, 61
Fretted metal/environment system, 162(fig)
Fretting wear test, 163(fig), 164(table)
Fretting wear volume of implant metals, 160, 165-169(figs)

H

Hip replacement, 52
Histiocytes, 38
Histology, 177, 189
Histomorphological reaction patterns, 90
Human plasma adsorption, 150
Hydroxyapatite. See Calcium hydroxyapatite.

I

Image analysis, 189
Implant metal alloys, 177
Implant coating, 90
Implant materials
metals—ion concentration and fretting wear, 160
particulates, 90
polymer particles, 189
testing for biocompatibility, 177
Implant retrieval, 75
Implants
biocompatibility of metal particles, 177
biomaterials, 136
bone lysis, 7
debris, 38, 118
endosteal osteolysis, 61
failure, 7, 75
in vitro cellular activation, 143
loosening, 27, 118
metal ion release, 161
overview, 1
plasma proteins adsorption, 150
profile imaging, 83
prostaglandin E2 synthesis, 111
spectroscopy analysis, 68
synovial cell interactions, 200
wear results, 40(table)
In vitro trials, 143
Inflammation, 118
Interface membrane, 90, 111
Interleukin 1, 143
Internal fixation plate, 90
Iron implant alloys, 177

J–L

Joint arthroplasties, 27, 38
Knee, 189
Ligament replacement, 189
Loosening, 8, 27, 38

M

Macrophage, 7, 68, 138
Mathematical modeling, 83
Metal alloys for powder production, 178(table), 182(table)
Metal-backed patella, 75
Metal ion concentration of orthopedic implant metals, 160
Metal ion release, 161
Metallic implants, 161
Metallic particulate materials, 90
Metallosis, 75
Modular devices, 161

O

Osteolysis
asceptic loosening of implants, 127
cascade phenomenon, 7
cemented surface replacements, 38
cementless components, 61
titanium-base alloy hip replacement, 52

P

Particles, 27
Particulates
arthroplasty, 68
biocompatibility, 127
debris, 38, 127
drastic osteolysis, 61
failure mechanism, 75
human plasma adsorption, 150
implant materials, 90, 136
in vitro cellular activation, 143
loosening, 27
metal ion release, 161
osteolysis, 7
polymer particles, 189
polymethyl methacrylate debris, 118, 127
profile imaging, 83
prostaglandin E2 synthesis, 111
recovery, 68
synovial cell interactions, 200
titanium-base alloy cementless total hip replacement, 52
titanium debris, 118
Patellar components
failure, 75
Patellofemoral joint, 83
Photon correlation spectroscopy, 68
Plasma proteins, 150
Plasma proteins—adsorption, 150, 153(table)
Polymer particles in vivo, 189
Polyethylene
endosteal osteolysis, 52
histopathological effects, 38
loosening of joint arthroplasties, 27
metal-backed patella, 75
prostaglandin E2 synthesis, 111
Polymeric debris, 7, 27, 90
Polymethyl methacrylate, 27, 52, 118
Powder characterization, 177
Powder production, 177
Profile imaging, 83
Prosthetic loosening, 27
Prostaglandin E2, 111, 143
Pseudosynovium, 127

R–S
Revision surgeries, 27, 69(table)
Stainless steel implants, 161
Stainless steel nails, 90
Suspension for injection, 177
Synovial cell interactions, 200
Synovium, 189

T
Taurolin
tissue response, 90
Testing for compatibility of metal implant
alloys, 177
Testing methods, 161
Ti-6Al-4V alloy, 161
Titanium, 38, 52, 118
Titanium-based implant alloys, 177
Total hip arthroplasty, 52, 61
Total knee arthroplasty, 83

U
UHMWPE. See Ultrahigh-molecular-weight polyethylene.
Ultrahigh-molecular-weight polyethylene (UHMWPE), 75, 83, 111
Uncemented arthroplasty, 61

V–W
Vehicles, 177
Wear debris
clinically retrieved bone cement, 143
interface membrane, 90
metal-backed patella, 75
polymer particles, 189
spectroscopy analysis, 68
synovial cell interactions, 200
titanium-based alloy, 52
ultrahigh-molecular-weight polyethylene, 38