

Subject Index

A

Abrasion, 266
 Abrasion resistance, 76
 Acoustic emission, 117
 Acrylic, 266
 Aeration, 199
 Alkaline phosphatase, 319
 Aluminum, 76, 297, 346, 400
 Analysis of variance, 30
 Anodic polarization, 60
 ANOVA, 30
 Arthroplasty, 297, 388, 409
 Asperites, 136
 ASTM standards
 F 136, 45, 88
 F 1408, 60
 Atomic absorption
 spectrophotometry,
 electrochemical, 179
 Auger electron spectroscopy,
 179
 Axial fatigue endurance limit, 96

B

Bending fatigue strength, 150
 Beta titanium alloys, 3, 60, 76,
 88
 Bone cement, 400
 Bone marrow, rat, 306
 Bone resorption, 297, 333, 388

C

Calcium, 319
 Calcium phosphate, 306
 Cell culture, 306, 357
 Charpy impact energy, 96
 Chromium, 88
 Coating, 136
 porous, 117, 150, 266
 Cobalt, 88, 231
 alloy, 400
 cobalt-chromium, 188
 Cold forming, 17

Collagenase, 333
 Corrosion, 346
 behavior, 188, 199, 240
 crevice, 231, 252
 fatigue, 136
 fretting, 219, 231, 357, 371
 pitting, 252
 resistance, 3, 45, 60, 163
 Crack initiation sites, 136
 Crack nucleation, 253
 Cytokines, 297, 333
 Cytotoxicity assays, 60

D

Dental casting alloys, 188
 Dental implants, 3, 319, 346
 Diffusion hardened, 96
 Displacement amplitude, 219
 Dissolution product, 219
 Dulling, 266

E

Elastic modulus, 3, 60, 76, 88
 Electrochemical behavior, 163
 Elongation, 45
 Etching, 136

F

Fabrication response, 60
 Fatigue, 76, 88, 150
 corrosion, 136
 strength, 240
 strength, bending, 150
 Fibroblast, 333
 Finite element analysis, 117, 150
 Flexural moduli, 96
 Forging, 17
 Fourier transform infrared
 spectroscopy, 306
 Fracture, 117, 199
 Fracture toughness, 76
 plane strain, 96

Fractography, 253
 Frequency analysis, 409
 Fretting, 96, 163, 252
 corrosion, 219, 231, 357, 371

G

Gold-silver, 188
 Grain size, 60

H

Hardness, 240
 Heat treatment, 3, 88
 Hip prostheses, 240, 252, 266, 357
 Hip replacement, 400
 Hot rolling, 17
 Hydrogen peroxide, 231

I

Immersion tests, 45
 Immunity, 163
 Inclusion content, 60
 Ion release, 400

J

Joint replacement, 333, 388
 Joint simulator, 266

K

Knee prostheses, 240, 409

L

Limited contact-dynamic
 compression plate, 371
 Load, applied, 199
 Load cell, 199
 Loading, 150, 252
 Loosening, implant, 297, 388

M

Macrophage, 297, 333
 Mechanical strength, 76

Melting
 cold hearth, 17
 plasma arc, 17
 vacuum arc, 17
 Microscopy, 60
 light, 136
 scanning electron, 136
 Microstructure, 76, 117
 Miller-Galante prostheses, 409
 Modular joints, 252
 Modulus of elasticity, 3, 60, 76, 88
 Molybdenum, 60, 88

N

Nickel chromium, 188
 Niobium, 45, 163
 Nitriding, 266
 Nitrogen diffusion hardening, 240
 Nitrogen hardening, 266
 Notch fatigue resistance, 76
 Notch sensitivity, 117

O

Omega phase, 3
 Orthopedic implants, 3, 60, 76, 88, 96, 231, 346
 hip prostheses, 240, 252, 266
 Osteoblasts, 319, 333
 Osteocalcin, 319
 Osteolysis, 388
 Oxidation, surface, 163
 Oxide chemistry, 179
 Oxide film, 199
 Oxide growth kinetics, 199

P

Palladium, 45
 Palladium-silver, 188
 Passivation, 45, 188
 repassivation, 199
 Passive dissolution, 179
 Passivity, 163
 Patellar component, 409
 PH, 199
 Physiologic solution, 306
 Plasma arc melting, 17
 Plasma spraying, 136

Plates, 371
 Polarization anodic, 45
 Polarization techniques,
 188
 Polyethylene, 266, 409
 Polystyrene, 306
 Prostaglandin, 297, 333
 Prosthetic implants, 88, 297
 Proteins, 179

R

Radiography, 388
 Rat bone marrow cell culture
 system, 306
 Rotary forging, 17

S

Saline solution, 231
 Saliva, 188
 Scanning electrochemical
 microscope, 199
 Scanning electron microscopy,
 136, 219
 Scratch tests, 199
 Shear loading, 150
 Shear moduli, 96
 Signal-to-Noise equations, 30
 Simulated interstitial electrolyte,
 179
 Sintered titanium, 30
 Spectroscopy, Fourier transform
 infrared, 306
 Stainless steel, 60, 231, 371
 Stress concentrations, 150
 Stromelysin, 333
 Surface damage, 252
 Surface hardening, 240
 Surface oxidation, 163

T

Taguchi experimental
 techniques, 30
 Tantalum, 45, 163
 Tensile properties, 60, 88
 Tensile strength, 45, 96, 240
 Thermomechanical processing, 17
 TIMETAL, 88
 Tin, 45
 Transport, 357
 titanium particle, 346

U

Ultrasonic inspection, 17
 Urinary elimination, vanadium,
 357

V

Vacuum arc melting, 17
 Vanadium, 76, 297, 346, 357, 400

W

Wear, 219, 409
 Wear debris, 357
 Wear particles, 219, 266, 297, 388
 transport, 346
 Wear resistance, 76, 96, 240
 Wettability, 240

X

X-ray photoelectron
 spectroscopy, 179, 306

Y

Yield strength, 30

Z

Zirconium, 45, 163