

Index

A

Aluminum

Alloys, 3, 28, 63, 100

Forging, 30

Application of fracture mechanics,
269

Austenitic stainless steel, 167

B

Ballistic damage, 344

Bench mark geometries, 409, 422,
435

Boundary integral equation, 409

C

C-shaped specimens, 50

Caustics, 387, 397

Charpy

Correlation, 207, 210

Energy, 207, 218

Chromium-molybdenum-vanadium
steel, 87

Clip gage, 363

Corrosion fatigue, 603

Compliance, 191

Composite materials, 316, 338

Corner cracks, 438

Crack

Branching, 104, 176

Closure, 63

Front curvature, 46

Growth

Correlations, 12, 293

Gages, 623

Retardation, 17, 70

Initiation, 599

Opening

Displacement, 33, 46, 66, 450,
503, 543

Stress, 72

Propagation rates, 178

Creep crack growth, 87, 186

Cryogenic testing, 250

Cylinders, 375

D

Damage

Tolerance, 354

Zone, 237

Data scatter, 271

Defect characterization, 280

Delay, 627

Ductile fracture, 236

Dugdale model, 313

E

Effective stress intensity, 19

Elevated temperature fatigue, 86,
147

F

Failure analysis, 77

Fatigue

Crack growth, 3, 28, 35, 48, 63,
86, 100, 125, 147, 288, 623

Crack initiation, 100

Life predictions, 22

Striations, 125, 135

Threshold, 22

Finite-element methods, 407

Flight simulation loading, 77

Fractography, 125, 131, 180, 224,
263, 549, 617

Fracture

Mechanics, 269, 288, 338, 456

Toughness, 207, 318

G

Graphite, 303, 316

Griffith-Irwin, 312, 313

Growth bands, 125

H

Hold time, 86

I

Inconel

100, 186

718, 87, 147

X-750, 147

Instability, 533

J J_{IC} , 212, 503, 543, 553, 576J-integral, 236, 250, 477, 503, 525,
543, 553, 576**K** K_{eff} , 19 K_{ISCC} , 167, 278**L**Linear elastic fracture mechanics,
387

Load

Interaction, 5

Spectrum, 79

Low temperature tests, 250

M

Microcracking, 313

Mode I caustics, 387

N

Notch root radius, 218

Notched bends, 326, 331

Notches, 100

Nozzle cracks, 403

O

Overloads

Compressive, 4, 71

Multiple, 11

Single, 8, 69

Tensile, 4, 49

P

Photoelasticity, 408, 424

Plastic zone, 19, 61, 66, 75, 126,
283, 313

Polymer fatigue, 125

Poly(methyl methacrylate), 125

Prestressing, 273

Prior loading, 272

Process zone, 238

RR-curve, 360, 364, 477, 503, 508,
525

R-ratio, 7, 64

Random loading, 4, 79
Residual stresses, 28, 33, 46

S

Shear strength, 320
Short cracks, 100
Short rod testing, 456
Spectrum loading, 79, 631
Stainless steel, 147, 167, 250
Stainless steel Type 304, 147
Steel, 87, 100, 553, 576, 599
Steel forgings, 49, 90
Stress

Concentration, 100
Corrosion cracking, 167, 171
Intensity factors, 111, 375, 387,
403, 416, 438

Structural life tracking, 288, 289
Surface crack, 360, 375, 403, 422,
438

T

Tearing modulus, 236, 495, 525
Tests, ΔJ , 91
Three-dimensional problems, 403
Titanium, 360
Turbine rotor steel, 90

V

Variable amplitude loading, 4, 77,
631