

# Subject Index

## A—B

Aeolian vibrations, 231  
 AES spectrometry, 210  
 Aluminum alloys, testing at Royal  
   Aerospace Establishment, 129  
 Aluminum conductor steel reinforced  
   electrical conductor, 231  
 Bearing steel, fretting wear, 190  
 Biaxial loading test, 170  
 Boundary element method, 85, 101

## C

Carbon fiber-reinforced epoxy laminates,  
   243  
 Cast iron, nodular, fatigue strength, 178  
 Cathodic protection, high strength steel,  
   217  
 Ceramics, 170  
 Clamping pressure, 13  
 Coefficient of friction, 60  
 Constant amplitude tests, fatigue strength of  
   nodular cast iron and steel, 178  
 Contact fatigue, fretting maps and, 49  
 Contact pressure, 263  
   distribution, 85  
   fatigue of high strength steel and titanium  
   alloy, 115  
 Corten A, 217  
 Crack, nonpropagating, 101  
 Crack formation, 33  
 Crack initiation site, 115  
   high strength steel, 217  
 Crack propagation, 8

## D—E

Debris beds, shear, 33  
 Delamination, carbon fiber-reinforced  
   epoxy laminates, 243  
 Elastic displacements, 33  
 Electrical conductor, aluminum conductor  
   steel reinforced, 231

Environmental effects, 1  
   fretting fatigue, 210  
 Epoxy laminates, carbon fiber-reinforced,  
   fretting fatigue, 243

## F

Fatigue life prediction, 178  
 Fatigue limit, 101  
 Fatigue properties, 8  
   steam turbine steel, 210  
 Fracture mechanics, 60, 101, 129, 153  
 Frequency, 13  
 Fretting, machine components under,  
   190  
 Fretting bridges, contact pressure  
   distribution, 85  
 Fretting corrosion, 23  
   fatigue strength of nodular cast iron and  
   steel, 178  
   high strength low alloy steel, 217  
 Fretting device, 13  
 Fretting fatigue, 33  
   aluminum conductor steel reinforced  
   electrical conductor, 231  
   carbon fiber-reinforced epoxy laminates,  
   243  
   contact pressure distribution, 85  
   corrosion role, 217  
   experiment with well-defined  
   characteristics, 69  
   fretting maps and, 49  
   history, 8  
   mechanisms, 23  
   power generation industry, 153  
   strength improvement model analysis,  
   101  
   variables, 60  
 Fretting fatigue damage  
   characterization techniques, 170  
   nucleation, 23  
 Fretting fatigue testing  
   appraisal of methods, 33  
   conceptual framework, 1  
   current practice, 263

Fretting fatigue testing—*continued*

- at elevated temperature, 199
- equipment, 1
- Hertzian contact, 69
- methods, 1
  - review, 263
- Royal Aerospace Establishment, 129
- nonconventional materials and methods, 1
  - power generation industry, 153
  - problems, 13
  - Royal Aerospace Establishment, 129
  - strength evaluation method, 101
  - variables, 263
- Fretting maps, 33, 49
- Fretting rigs, experimental, power generation industry, 153
- Fretting wear, 23, 33, 49
  - bearing steel, 190
  - carbon fiber-reinforced epoxy laminates, 243
- Frictional force, 129
  - high strength steel and titanium alloy, 115
  - power generation industry, 153
- Friction log, 33

## G—H

- Grooving, on contact surface, 101
- Gross slip regime, 49
- Hertzian contact, 69
- High strength steel, 115
  - contact pressure and fatigue, 115
  - fretting corrosion, 217

## I—L

- Interface slip, 170
- Knurling, on contact surface, 101
- Load spectrum tests, fatigue strength of
  - nodular cast iron and steel, 178

## M

- Machine components, life testing, 190
- Mechanics of contact, 1
- Method of caustics, 85
- Microstructural studies, 49
- Mixed stick-slip regime, 49
- Mossbauer spectrometry, 210

## N—O

- Nonpropagating crack, 101
- Overhead electrical conductors, 231
- Oxide debris, 210

## P—R

- Partial-slip regime, 69
- Particle detachment, 33
- Polymer composites, 243
- Power generation industry, fretting fatigue, 153
- Residual stress, 190, 199
- Royal Aerospace Establishment, fretting fatigue testing, 129

## S

- Seawater corrosion, 217
- Servohydraulic testing machine, adaptation, 190
- Shear stress, 170
- Shot peening, 178, 199
  - steam turbine steel, 210
- Slip amplitude, 13
- Small crack growth, 153
- S-N* plots, 85
  - power generation industry, 153
- Spacer clamps, 231
- Standardization, 129, 263
- Steam turbine steel
  - fretting fatigue properties, 210
  - shot peening, 199
- Steel, *see also* Steam turbine steel
  - high strength low alloy, fretting corrosion, 217
  - structural, fatigue strength, 178
- Stick region, 49, 115
- Strength improvement models, analysis, 101
- Stress concentration, high strength steel and titanium alloy, 115
- Stress intensity factors, 69, 101, 129
- Stress redistribution, carbon fiber-reinforced epoxy laminates, 243
- Surface residual stresses, 1

## T—V

- Tangential stress, 170
- Temperature, elevated, fretting fatigue testing, 199

- Tensile stress, 170
- Tension-tension fatigue loading, carbon-fiber reinforced epoxy laminates, 243
- Thermal constriction resistance, 263
- Thermal mechanics, modeling, 263
- Three-point bending test, 170
- Titanium alloy, contact pressure and fatigue, 115
- Uniaxial tension-compression test, 170
- Velocity accommodation mechanism, 33