

Subject Index

A

Aluminized single crystal AM1
 superalloy, 223
Aluminum
 alloy, 167
 cast, Al 319 alloy, 53
 cast alloy, 138
 Ti-24Al-11Nb, 279
Applied stress, 150
Automotive engine parts,
 aluminum alloy, 138

B

Bending machine, rotating, 319
Bithermal fatigue, 186

C

Carbon coating depletion, 279
Chromium
 chromium ferrite-martensite
 steel, 239
 NiCr22Co12Mo9, 36
 steel, 304
CM247LC-DS, 69
Coatings, 119
 aluminide, 223
 carbon, depletion, 279
 NiCoCrAlY overlay, 119
 plasma-sprayed, 3
 thermal barrier, 296
Cobalt
 NiCr22Co12Mo9, 36
Composite coating, 3
Composites, 167, 279
 metal matrix, 186, 204
Constitutive model, 53, 223
Counter-clockwise diamond
 cycle, 69
Crack density, 279
Crack initiation, 186
Crack nucleation, 279
Crack propagation, 167
Creep, 304

Creep damage, 36, 167
Creep fatigue, 186
Creep-fatigue interaction, 167
Crack propagation, 167
Cylinder heads, aluminum
 alloy, 138

D

Damage assessment, 279
Damage development, 36
Damage mechanisms, 18, 204
Damage model, 223
Deformation behavior, 257
 cyclic, 3, 36, 53, 304
 inelastic, 85
Dendrite arm spacing, 53
Diamond cycle, 257
 counter-clockwise, 257
Dimensional stability, 53
Dispersoids, 167
DS CM 247 LC, 3

E

Electron probe microanalyzer,
 279
Equivalent stress model, 319
European Materials Long Term
 Programme, 239

F

Ferrite-martensite steel, 239
Finite element code, 319
Fusion reactor test blankets, 239

H

Hardening, cyclic, 36
Hysteresis energy, 138
Hysteresis loops, 69

I

IMI 834, 18
IN100, 69

IN738, 69

IN-738LC, 119, 257

Inconel 617, 36

Inelastic strain, 138, 150

Isostrain composite model, 3

Isothermal fatigue, 204, 319

L

Laminate, quasi-isotropic, 204

Lead

60Sn-40Pb, 85

Loading conditions, 103, 239, 296

Loading, in-phase, 18

Loading, out-of-phase, 119

Loading, thermally induced,
304, 319**M**

Magnesium

Al-Si-Cu-Mg, 138

Mean stress, 18

Metal matrix composites, 186, 204

Microcrack propagation model,
167Microstructure, 3, 85, 167
evolution, 18Models and modeling
constitutive, 53, 223

damage, 223

equivalent stress, 319

isostrain composite model, 3

life prediction, 119

microcrack propagation, 167

thermal strain fatigue, 186

viscoplastic, 103

Molybdenum

NiCr22Co12Mo9, 36

Multiaxial thermo-mechanical
fatigue, 257**N**

Nickel-base alloy, 69

superalloy, 3, 36, 119, 150, 223

NiCoCrAlY overlay, 119

Nicrofer 5520 Co, 36

Nimonic 90, 69

Niobium

Ti-24Al-11Nb, 279

O

Out-of-phase tests, 150

Out-of-phase thermo-mechanical
loading, 119

Overlay coating, 119

Oxidation, 18, 167, 204

damage, 167

resistance, 3

P

PCA-1, 3

Physical vapor deposit, 296

Pistons, aluminum alloy, 138

Planar dislocation slip, 18

Plasma-sprayed coating, 3

Precipitate coarsening, 53

R

Rachetting, 103

Reactor, fusion, 239

Rotating bending machine, 319

S

SC 16, 257

Scanning electron microscope,
279

confocal, 85

Shear strength, interfacial, 279

Silicon

Al-Si-Cu-Mg casting alloy,
138

silicon carbide fibers, 204, 279

Silver

tin-silver base solder alloys, 85

Solder, lead-free, 85

Spectrum loading, 204

Steel

chromium, 304

ferrite-martensite, 239

stainless, 304

Strain amplitudes, 69

Strain distribution, 257

Strain range, 150

Strain range partitioning, 186

Strain rate effects, 53

Strain ratio, 119

Strain temperature cycling, 69

Stress amplitudes, 36

Stress model, equivalent, 319
 Stress-strain behavior, 138, 167
 Stress-strain response, 18, 36,
 53, 69
 Superwaspaloy, 223
 Surface roughness, 85

T

Thermal barrier coatings, 296
 Thermal cycling, 85, 279
 Thermal expansion, 186
 Thermal expansion mismatch,
 coefficient of, 85
 Thermal fatigue, 150, 223
 Thermal loading, 103
 Thermal-mechanical fatigue, 223
 Thermal recovery, 53
 Thermal strain fatigue model,
 186
 Thermal stress field, 319
 Thermomechanical loading, 103

Time dependent behavior, 204
 Timetal 21S matrix composites,
 204

Tin

60Sn-40Pb, 85
 tin-silver base solder alloys,
 85

Titanium alloy

high temperature, 18
 i-24Al-11Nb, 279Ti-15-3, 186

Transmission electron

microscopy, 18, 53

Turbines

blades, 18, 119, 223, 257,
 296, 304
 gas, 3, 150, 223

Two-bar system, 103

V

Viscoplastic concept, 119
 Viscoplasticity, 103