

Subject Index

A

- Absorbed energy, 93
- Alloy 718, 321
- Aluminum alloy composites, 234
- Annealing effects, 455
- ASTM Committee E08, 251
- ASTM standards
 - A 508, 107
 - A 533, 48, 80, 350
 - E 1253-88, 438
 - E 1921-97, 18
 - E 8, 251
- Axial specimens, 195

B

- Bainite, 380
- Ball indentation simulations, 306
- Bar specimens
 - cracked round, 3
 - notched, 321
- Bend specimens, subsized, 67
- Beremin cleavage model, 107
- Brittle fracture, 18, 33

C

- Carbon dioxide laser welding, 464
- Centre-cracked tension specimens, 80
- Ceramic matrix composites, 294
- Charpy-V specimens, 409
 - impact properties, 137
 - impact testing, 464
 - instrumented impact test, 137
 - miniature, 18
 - precracked, 67, 426
 - precracked miniature, 3
 - reconstituted, 426, 464, 477
 - subsized, 107, 137
 - subsized, notch test, 93
- Chromium-molybdenum steel, 321, 380
- CH-V, 438

Circumferentially cracked bars (CCB), 80

- Cleavage, 33
 - failure, 107
 - fracture region, 93
 - model, Beremin, 107
- Compact tension specimens, 48
- Compliance, 339
- Composites, 294
- Cone indentation tests, 306
- Constitutive
 - equation, 93
 - law, 221, 306
- Constraint, 67, 80
 - loss of, 3
- Coolant loss, 195
- Correlation, 137, 380
- Crack extension, 48
- Crack growth, 321
- Crack length, 67
- Crack propagation, 211
- Crack tip constraint, 80
- Crosshead displacement, 339
- Cyclic softening, 181

D

- Defect flux, 211
- Deformation
 - cyclic, 181
 - maps, 283
 - mechanisms, 267
 - microstructures, 267
 - rate, 234
- Disk bend test, 267
- Dislocation obstacles, 221
- Ductile fracture, 33
- Ductile-to-brittle transition regime, 3
 - temperature (DBTT), 137, 151
- Dynamic impact test, 107
- Dynamic oscillations, 67

E

- 18MND5 steel, 464

Elastic-plastic behavior estimation, 350
 Elastic-plastic temperature range, 18
 Electrochemical polishing, 267
 Electrochemical thinning, 283
 Electron beam welding, 409, 426, 438
 ElectroThermoMechanical test (ETMT), 234
 Embrittlement, 93, 107, 137, 151
 Extensometers, 234

F

Fatigue
 crack growth, 321
 precracking, 80
 properties, 181
 response, 211
 test, 181
 Ferritic/martensitic steel, 93
 Ferritic steel, 33, 107, 211, 380
 Fiber strength, 294
 Finite element analysis, 80, 195, 339
 loss of constraint calculation, 3
 method, 306
 modeling, 221
 simulation, 107, 221, 350
 stress state determination, 251
 three-dimensional, 93
 Flow localization, 221

G

Geometrical deviation, 477

H

Heat affected-zones, 380
 Hourglass specimens, 181
 Hyperbolic tangent curve, 107

I

Impact energy, total, 477
 Impact specimens, 151
 Impact testing, 67, 93, 107, 464
 Indentation methods, 306
 Initiation toughness, 48, 80

Insert length, 426
 International Organization for Standardization
 EN ISO 13919-1, 464
 Inverse method, 350
 Ion-irradiated TEM disks, 267
 Irradiation, 137, 409, 438
 effects, 267
 fluence, 455
 hardened metals, 283
 post-irradiation examination, 181
 proton, 211

J

J_R curve, 48
 J -integral, 80

L

Lateral expansion, 477
 Load displacement, 80, 221
 Loading amplitude, 211
 Loading curve, 339
 Load penetration curves, 306
 Local approach, 33, 107
 Low-activation ferritic/martensitic alloy (F82H), 211
 Lower shelf cleavage, 33
 conditions, 3

M

Master Curve, 3, 18
 Mechanical properties, 195, 211, 283, 380
 Microstructure, 181, 267, 321
 Miniature specimens, 33, 211
 bar, 3, 321
 Charpy-V, 3, 18
 hourglass, 181
 ring-stretch, 195
 tensile specimen, 294, 371
 tensile strength test system, 234

Models and modeling
 Beremin cleavage, 107
 cleavage fracture, 93
 finite element, 221
 Rousselier porous, 107

Molybdenum foil rings, 283
 Molybdenum steel, 321
 Multiaxial stress states, 251

N

Nickel alloy, 234
 Nimonic 901, 234

O

Offset strain, 339
 Optimized insert length, 426

P

Parametric study, 350
 Plane-weave, 294
 Plasticity theory, 221
 Plastic strain
 average, 267
 deformation maps, 283
 surface, 267
 Proton irradiation, 211
 Punch tip displacement, 339

R

Ramberg-Osgood relation, 350
 R-curve, 33
 Reactivity-initiated accidents, 195
 Reactor Pressure Vessel, (RPV), 3, 48, 350, 477
 aging phenomena studies, 409
 ductile-brittle transition
 temperature, 151
 embrittlement effects on, 455
 embrittlement surveillance
 program, 107
 fusion reactor, 181
 geometry, 251, 137
 VVER-440, 151
 welding, 464
 WWER 440, 18
 Reconstitution, 151, 409, 477
 systems, 438
 technique, 426
 technology, 455, 464
 Rectangular dogbone testpiece, 234

RESQUE project, 409, 426, 438,
 464, 477
 Ring stretch specimens, 195
 Rousselier porous model, 107

S

Satin-weave, 294
 Scanning electron microscopy, 211
 Shear fracture appearance, 477
 Shear punch test, 339, 371, 380
 Shear ultimate strength, 371
 Shear yield strength, 339, 371
 Silicon carbide (SiC)
 composites, 294
 Single-edge notched bend
 (SENB), 48
 16MND5, 107
 Slow bend three-point bend
 test, 409
 Small punch test, 350
 Small specimen test technique
 (SSTT), 181
 Steel, 3, 48
 A 533B-1, 48, 80, 350
 chromium-molybdenum, 321,
 380
 F82H, 33
 ferritic, 33, 107, 211, 380
 ferritic/martensitic, 181
 ion-irradiated, 267
 low alloy, 455
 molybdenum, 321
 304L, 321
 Strain
 energy density, 350
 hardening, 221, 306
 localization, 283
 rates, 195
 softening, 221
 Stress-critical area criteria, 93
 Stress state point plots, 251
 Stress strain
 characteristics, 234
 constitutive laws, 221
 relation, 350
 response, 195, 251
 Stud welding, 409, 426, 438, 477
 Subsize specimens, 137, 321
 bend specimens, 67
 Charpy-V, 93, 107, 137

- | | | |
|--|---|---|
| impact bend specimens, 151
TEM pieces, 283
Surveillance program, 18, 107,
137 | T | U
Uniform elongation, 371
Upper shelf ductile R-curve, 33
Upper shelf energy (USE), 137,
426 |
| | | V |
| VVER-440 reactors, 151 | | |
| | | W |
| Welding, 464
Welds, 380
characteristics, 151 | | |
| | | Work hardening, 339
WWER 440, 18 |
| | | |
| | | Y |
| Yield load, 477
Yield strength, 339, 350, 371
Yield stress, 221 | | |
| | | Z |
| Zircaloy cladding, 195 | | |