

Subject Index**A**

Actinide decay, 660
 AISI 316, 540
 AISI 321, 429
 Alloys, model, 164
 Alpha decay, 660
 Aluminum, 714
 Amorphization, 670, 741
 Annealing, 164
⁴⁰Ar, 605
 ASME Code Case N629, 300
 ASTM A 508, 159, 194
 ASTM E 185, 277
 ASTM E 1921, 208, 289
 Atom probe field-ion microscopy, 194
 Atom probe tomography, 123
 Auger electron spectroscopy, 553, 565

B

Bayes paradigm, 311
 Beryllium coated, 105
 Body centered cubic steel, 454, 612
 Boiling water reactors, 92, 632
 Boron carbide, 670
 Bubbles, 479, 492, 670

C

C-Mn steel, 311
 Cellulose triacetate, 605
 Ceramic, 660
 Channel deformation, 352
 Chemical dosimeters, 605
 Charpy curve fitting, 632
 Charpy embrittlement, 247
 Charpy impact energy, 311
 Charpy impact toughness, 123, 149, 208,
 408, 632, 693
 Charpy properties, 376
 Charpy transition temperature, 159, 247
 Charpy upper shelf region, 266
 Chromium, 516, 540

Cleavage fracture, 164
 Coincidence Doppler broadening, 590
 Cold worked steel, 446
 Complete oxide, 391
 Compliance, 612
 Copper, 164, 159, 208, 266, 352, 365, 753
 aggregation, 590
 Copper alloys, 753
 Creep, 702
 compliance coefficients, 454

D

Defect clusters, 78
 Deformation, 401
 Diffusion
 radiation-enhanced, 516
 Diffusion couple, 516
 Dimple, 3, 15
 Dislocation, 419, 579
 Dislocation loop, 78, 727, 741
 Displacement rate, 429
 Dose-damage correlations, 221, 727
 Dosimetry, 605
 dpa, 221, 429, 446, 479, 553, 727
 Drop weight, 208
 Ductile fracture, 15
 Ductile-to-brittle transition temperature,
 123, 138, 311, 565

E

Elastic modulus, 66, 655
 Electrical conductivity, 623
 Electrical resistance, 66, 623
 Electron irradiation, 365, 660
 Elongation, 352
 uniform, 612
 Energy dispersive x-ray spectroscopy, 391

F

F82H, 401, 408
 Face centered cubic steel, 454, 612

Fast reactor, 446, 466
 Fatigue life prediction, 502
 Fatigue responses, 502
 Ferritic/martensitic steels, 321, 376, 401, 408, 466, 502
 Ferritic steels, 326, 553
 oxide dispersion strengthened, 391
 Field emission gun scanning transmission electron microscopy, 553
 Fluence, 15, 605
 Flow localization, 352
 Foils, 492, 605
 Forging steels, 194
 Fracture strain, 15
 Fracture toughness, 15, 123, 149, 159, 277, 289, 408
 Frank loops, faulted, 46
 Fusion reactors, 702

G

Glass, 660
 Grain boundaries, 138, 540, 579
 fracture ratio, 565

H

Hardening, 78, 321, 365
 solute-related, 194
 Hardness, 92, 194, 655, 714, 741
 Heat treatment, 376
 pre-irradiation, 546
 Heavy ion beams, 605
 Helium, 105, 479, 492, 533, 655
 behavior, 670
 High flux isotope reactor, 408
 High flux reactor, 401
 High-LET dosimetry, 605
 Hydrogen, 533

I

Impact properties, 376, 693
 Integrity, 632
 assessment, 277, 300
 Information fusion, 632
 Interdiffusion coefficients, 516
 Intergranular cracking, 78

Intergranular fracture, 164
 International Atomic Energy Agency, 289
 International guidelines, 289
 ion irradiation, 655, 670, 741
 Irradiation creep, 454, 466
 Irradiation damage, 194
 Irradiation embrittlement, 123, 164, 187, 208, 221, 247, 266, 277, 289, 300, 326, 408, 579, 632
 mechanisms, 138
 non hardening, 565
 Irradiation growth, 727
 Iron alloys, 579
 Iron-copper alloys, 352, 365, 590

K

Kinetic models, 479
⁸⁹Kr, 605

L

Light water reactors, 15
 Lithium, 702
 Lower temperature limit, 429

M

Magnox reactors, 311
 Manganese, 194
 Martensite transformation, 105
 Master curve, 123, 208, 277, 289, 300, 408
 Matrix defect, 365
 Maximum likelihood method, 311
 Mechanical alloying, 391
 Mechanical properties, 3, 32, 105, 221, 376, 655, 693
 Microchemical evolution, 46
 Microstructural characterization, 194
 Microstructural evolution, 46, 365
 Microstructure, 3, 32, 78, 321, 376, 391, 401, 429, 492, 655, 714, 727, 741, 753
 Modeling, 138, 326, 553, 579, 632

N

Nano-indentations, 655
 Neutron flux, 326

Neutron irradiation, 3, 15, 32, 56, 66, 149, 208, 247, 266, 277, 311, 365, 391, 401, 429, 446, 479, 320, 590, 693, 714, 727, 741, 753
 Nickel, 164, 159, 194, 266, 479, 516, 533

O

Offset strain, 612
 Oxide particle stability, 391
 Oxygen, 702

P

Palladium, 492
 Phosphorus, 164, 266
 accumulation, 138, 579
 intergranular segregation, 553, 579
 segregation, 565, 579
 Plutonium decay, 660
 Point defects, 326
 concentration, 419
 sinks, 579
 Positron Annihilation Lineshape Analysis, 194
 Positron annihilation spectroscopy, 590
 Post-irradiation annealing, 78, 194, 365, 590, 727
 Post-irradiation deformation, 401
 Postweld heat treatment, 208
 Power reactor, 632
 Precipitation, 66, 123, 670, 727, 741
 radiation-induced, 56, 579
 Precracked Charpy, 149
 Pressurized water reactors, 429
 Proton irradiation, 46, 92, 540

R

Radiation damage, 326, 321, 419, 660, 727
 Reactor pressure vessel, 123, 138, 149, 221, 247, 266, 277, 289, 300, 326, 565, 632
 Recoil resolution, 391
 Re-embrittlement, 164
 Reference temperature, adjusted, 300
 Reirradiation, 149
 Relative dosimeters, 605

S

Segregation, radiation-induced, 540, 553, 579
 Shear modulus, 66
 Shear punch test, 612
 Shear ultimate strength, 612
 Shear yield strength, 612
 Silicon, 266, 714
 Silicon carbide, 623, 655
 Silicon carbide/silicon carbide composites, 655
 Site competition, 553
 Sodalite, 660
 Solute additions, 56, 553
 oversized, 46
 Stainless steel, 3, 419
 austenitic, 15, 32, 46, 56, 66, 78, 92, 105, 429, 446, 502, 540
 helium implanted, 105
 Statistical analysis, 311
 Statistical modeling, 159
 Stress corrosion cracking, irradiation assisted, 46, 78, 92, 540
 Stress relief time, 208
 Submerged-arc welds, 208, 311
 Subsize CH-V test, 164
 Swelling, 32, 56, 66, 419, 429, 446, 454, 466, 479
 resistance, 321
 Synergistic effects, 565

T

Temperature, variation, 714, 753
 Temperature monitor, 623
 Tensile properties, 376, 502, 612, 693
 Tensile strength, 3, 149, 352, 408
 Thermal annealing, 149
 Thermal creep, 454
 Thermal desorption, 655
 Through-wall attenuation, 221
 Transition temperature, 208, 408
 Transmission electron microscopy, 3, 670, 660, 741

U

Universal Slopes, 502

770 EFFECTS OF RADIATION ON MATERIALS

V

- Vacancy cluster, 365, 590
- Vanadium alloy, 693, 702, 714
- Vickers hardness test, 714
- Void, 3, 15, 66, 419, 429, 479, 579
- VVER reactors, 32, 429

Y

- Yield strength, 3
- Yield stress, 352, 693
- Young's modulus, 66
- Yttrium, 714

W

- Waste, 660
- Work softening, 352

Z

- Zircaloy, 741
- Zirconium alloys, 727