### Subject Index

#### A
- Absorbed dose, 456
- levels, 433
- Accelerator transmutation of waste, 782
- ACRR reactor, 423
- Activation, 559, 792
  - calculation, 690
  - detector, 55, 618, 804
  - foils, 578, 720
  - measurements, 155, 323, 720, 751
  - method, 711
  - neutron resonance, 187
- Advanced Neutron Source, 568
- Alanine, 423
- ALICE, 804
- Aluminum, 568
  - alloys, 233
    - aluminum/sodium reaction, 720
  - detector, 800
- Amino acid, 423
- Annealing, 9, 19, 38, 447, 515, 546
- Arrhenius Equivalent Temperature, 195
- Associated Benchmark Data Base, 333
- ASTM Standards
  - E 706: 9, 19
- Axial distribution, 132

#### B
- Backscattering effect, 392
- Barium silicate, 456
- Beam tubes, 140
- Beltline plate materials, 628
- Benchmark, concrete, 392
- Benchmark data base, 333
- Benchmark experiment, 358
- Benchmark method, 401, 559
- Benchmark neutron spectra, 641
- Benchmark, Pool Critical Assembly, 376
- Benchmarks, neutron leakage, 368
- Beryllium, 187
  - irradiations, 546
- Boiling water reactor, simplified, 464
- Bonner spheres, 290, 300
- Boron, 792
  - concentrations, 167
  - BR2 reactor, 546, 608
- Bubble detectors, 225
- BUGLE-80, 650
- BUGLE-95, 660
- B&W Nuclear Technologies, 744
  - B&WOG Cavity Dosimetry Program, 358, 447

#### C
- Calcium sulfate, 456
- Calibration, reference, 401
- CANDU reactors, 441
- Cavity dosimetry, 55, 358
- Cavity, reactor, 447
- CEA Nuclear Protection and Safety Institute, 411
- Chromatography, 203
- Cobalt, 177, 500, 727, 792
- Collision, 187
- Concrete benchmark experiment, 392
- Copper, 500
- Core loading, 147
- Counter, position sensitive, 263
- Covariance matrix, 310
- Critical assembly, 456
- Criticality accidents, 411
- Criticality calculations, 368
- Cross section adjustment, 348
- Cross section, cobalt, 727
- Cross section, differential scattering, 737
- Cross section evaluation, 694
- Cross section, gadolinium, 744
- Cross section, gold, 727
Cross section library
BUGLE-80, 650
BUGLE-93, 660
DOSCROS84, 680
ENDF/B-VI, 348, 660, 680, 704, 804
ENDF-VI, 694
GLUCS, 680
IRDF-85, 641, 670
IRDF-90, 680, 694
JENDL, 187, 670, 720
JENDL-3, 670, 680
SAILOR, 650
VITAMIN-B6, 660
VITAMIN-C, 392
Cross section standard, 704
Cross section, thermal neutron, 711

Ductile fracture, 533
Dummy assemblies, 147
Dynamic compensation, 255

ELECTRABEL, 323
Electrical conductivity, 500
Electron linear accelerators, 618
Electron paramagnetic resonance, 423
Electron spin resonance, 423
ELXSIR library, 333
Embrittlement, 3, 9, 19, 533
boron effects on, 167
data base, 515
ductile fracture process, 533
Nuclear Regulatory Commission research, 3
transport data, 140
VVER reactors, 464
weld, 38
ENDF/B-VI, 348, 660, 680, 704, 804
ENDF-VI, 694
Energy dependent cross section, 670
Energy Selective Neutron Irradiation Test Facility, 727
Euratom Working Group on Reactor Dosimetry, 233

F
Fast Flux Test Facility/Materials Open Test Assembly, 500, 523, 773
Filters, 310
Fission fluxes, equivalent, 323
Fission counters, 588
Fluence monitoring, 29, 38, 55
benchmark experiment, 358
Bonner spheres, 290
calculation, 114, 744
damage, 472
diodes, 509
energy dependence, 704
estimates, 45, 628
factors affecting, 490
helium accumulation, 761
LEPRICON, 65, 75
light water reactor, 104
magnetic response, 215
mapping, 804
PCDC calculations, 155
rate measurements, 233, 401, 515
scraping samples for, 147
short decay times, 177
test reactor, 598
three dimensional test, 343, 358, 376
uncertainties, 85, 94
Flux, 203, 343, 559, 690
beginning-of-cycle, 140
monitors, 233
neutron distribution, 588
neutron estimations, 205
neutron, spectrum, 447
neutron, thermal component, 650
neutron transient, 245
research reactor, 568, 588
three-dimensional synthesized, 358
Foil, monitor, 177
Foil technique, 187
Ford Nuclear Reactor, 628
Framatome reactor, 65
Fuel monitoring, spent, 225
Fuel rod power, 608

G
Gadolinium, 744
Gamma calculations, two dimensional, 608
Gamma detector, 447
Gamma induced damage, 578
Gamma neutron environments, 423
Gamma radiation, 433
Gamma rays, 441, 456, 751
Gamma transport analyses, 114, 650
Gas cooled reactor, 761
GLUCS, 680
GNASH, 727
Gold, 711, 727

H
Hardening, 533
Heavy water reactor, 568
Helium
formation, 546, 782
measurements, 167, 310, 761
HETC computer program, 559, 800
High flux test reactor, 140
High resolution neutron transmission, 737
Hiroshima, 751
Hydrogen determination, 271

I
Inconel 718, 782
Indium metal target, 187
Integrating Thermal Monitor, 195
Integrity, vessel, 3
International Atomic Energy Agency, 690
  Coordinated Research Programme, 464
International Reactor Dosimetry File, 641
Iron, 310, 744
Iron displacements, 384
Iron fluorescence detectors, 147
Iron inelastic scattering, 392
Iron wires, 215
Isomer ratio, 177
Isotope reactor, high flux, 140

J
Japanese Evaluated Nuclear Data Library Dosimetry File, 187, 670, 720
JENDL, 187, 670, 720
JENDL-3, 670, 680
Japanese Nuclear Data Committee, 670
JENDL, 187, 670, 720
JENDL-3, 670, 680
K
Kerr soft-tissue kerma factors, 300
Kinki University Reactor, 711
Koebert reactor, South Africa, 155
KORPUS facility, 480
KUCA, 456
Kyoto University Critical Assembly, 456
Kyoto University Reactor, 711

L
LAHET, 773, 782
LAMPF, 773, 804
LANSCE, 704
Least squares formalism, 75, 348
LEPRICON, 75
adjustment, 333
methodology, 65
Light water reactor, 104, 123
data base, 533
standards, 9, 19
surveillance, 392
Light water spectrum, 472
Linear differential system, 245
Liquid Scintillation Counter, 45
Lithium fluoride high fluence rate gamma detector, 447
Lithium targets, 761
Loading
core, 147
MOX, 132
Long counter, 263
Los Alamos Neutron Scattering Center, 704
Los Alamos Spallation Radiation Effects Facility, 773
Lovisa reactors (See also VVER-440), 45

M
Magnesium silicate, 456
Magnetic properties, 215
Magnox reactors, 384
MAPLE-X10 reactor, 588
Mapping, gamma ray dose, 441
Mass spectrometry, 167, 203
Materials development, 773
Materials Dosimetry Reference Facility, 401
Matrix damage, cascade induced, 533
Maxwellian distribution field, 711
MCBEND, 123, 323, 384
MCNP transport code, 368, 376, 523, 588, 773, 782
Mechanical property changes, 490
Metallurgy, 9, 19
Metal target, 187
MHTGR, 761
Modeling
cobalt, 177
damage, 9, 19
damaged, 608
measurement apparatus, 368
microstructural, 533
nonlinear regression, 694
reactor sides, 384
sensitivity, 114
theoretical model method, 727
transport analysis, 744
Monitor foil, 177
Monitoring, fluence, 29, 38, 55
benchmark experiment, 358
Bonner spheres, 290
calculation, 114, 744
damage, 472
diodes, 509
energy dependence, 704
estimates, 45, 628
factors affecting, 490
helium accumulation, 761
LEPRICON, 65, 75
light water reactor, 104
magnetic response, 215
mapping, 804
PCDC calculations, 155
rate measurements, 233, 401, 515
scraping samples for, 147
short decay times, 177
test reactor, 598
three dimensional test, 343, 358, 376
uncertainties, 85, 94
Monte Carlo, 323, 348, 368, 376, 773
indium natural target, 187
LAHET, 773, 782
MCBEND, 123, 323, 384
MCNP, 368, 376, 523, 588, 773, 782
Saint Laurent B1 MOX, 132 simulations, 263, 618
MOS dosimeter, 441
MTR, 598, 608
Multiple scattering, 187

N

Nagasaki, 751
National Institute of Standards and Technology, 447, 509
Neptunium, 704, 711
NE213, 300
scintillation detectors, 280
Neutron detection, 225
rhodium detectors, 245
silver detectors, 255
Neutron energy, 263
Neutron field spectrometry, 290
Neutron fluence monitoring, 29, 38, 55, 650, 800
benchmark experiment, 358
Bonner spheres, 290
calculation, 114, 744
damage, 472
energy dependence, 704 estimates, 45, 628
factors affecting, 490
helium accumulation, 761
LEPRICON, 65, 75
light water reactor, 104
PCDC calculations, 155
rate measurements, 233
reactor filters, 310
reference facility, 401
research reactor, 598
response functions, 280
short decay times, 177
spectra, 447
three-dimensional test, 343
uncertainty in, 85, 94
Neutron flux, 140, 203, 690 estimations, 205
research reactor, 568, 588

INDEX 849

Neutron gamma cross sections, 650
Neutron gamma environments, 423
Neutron leakage benchmarks, 368
Neutron photon transport, 523
Neutron resonance activation, 187
Neutron spectrum effect, 472, 641
Neutron spectrum technique, notched, 271
Neutron transport, 628, 650
calculation, 65, 114, 147, 690
validity, 384
code, 358, 376
ex-core, 333
Neutron Unfolding Package Code (NEUPAC), 720
Nickel, 500
Nickel-cobalt reaction, 177
Nickel wires, 215
Niobium, 45, 694, 203
fluence detectors, 147
Nitrogen, 737
Nonlinear regression model, 694
Nuclear Data Guide for Reactor Neutron Metrology, 641
Nuclear Regulatory Commission, 3

O

Oak Ridge Electron Linear Accelerator, 737
Obriegheim power plant, Germany, 147
ONEDANT, 588
Optical absorbance gamma dosimeters, 447
OSIRIS reactor, 255, 472

P

Pade-approximation, 694
Paul Scherrer Institute, 800
PCDC dosimetry cross sections, 155
Peele’s puzzle, 75
Permeability, 215
Photoneutrons, 618
Photon flux distributions, 588
PIREX, 800
PKA spectrum, 782
Plate materials, 628
Pool Critical Assembly Benchmark, 376
Power distribution, 45
Power-Reactor Embrittlement Database, 94, 515
Precipitation, 533
Pressurized water reactor, 65
Proton accelerator, 782
Proton fluence, 800
Proton Irradiation Experiment, 800
Proton recoil, 300
Pulsed sphere experiments, 348
Pulse Radiation Facility, 300

R
Radiation Metrology Laboratory, 433, 680
Radiotherapy rooms, 618
Ramp, 245
Ramp program, 255
RBT-6 reactor, 480
Reaction rate, 187
Reactor Information System database, 690
Reactor shielding, 660
Reference materials, 233
Materials Dosimetry Reference Facility, 401
Reference neutron spectrum, 411
Regulations draft, neutron fluence, 104
research impact on, 3
Remanence, 215
Resonance, 704
integral, 711
parameters, 737
Reusability, thermoluminescence dosimeters, 433
Rhodium, 233
self powered neutron detectors, 245
R-matrix analysis, 737

S
SAILOR cross section library, 650
SANDII, 680
Saturation activation rates, 123
Saturation activities, 187
Scattering detectors, 737
Shielding, 660
SILENE, 411
Silicon bipolar transistors, 578
SILOE reactor, 245, 472
SINCROS-II, 727
SINQ, 559
SNLRML, 680
Solid State Track Recorders, 195
Spallation neutrons, 782, 800
Spallation neutron source, 559, 804
Spectral calculation, 578, 628, 641
Spectrometry, 225, 280
Bonner spheres, 290, 300
energy dispersive X-ray, 500
mass, 167, 203
Spectroscopy, 423
Spectrum adjustment, 680, 720
Spectrum determination, 680
Spectrum field, 711
Spectrum, fission, 670
Spectrum, neutron, effect, 472, 641
Spectrum, neutron, notched technique, notched, 271
SPR-III reactor, 423
Standards, 9, 19, 660
European, 464
National Institute of Standards and Technology, 447, 509
neutron field, 670
reference materials, 233
STARFIRE reactor, 500
Steel, 203
boron determination in, 167
cylinder, 401
hydrogen determination in, 271
pressure circuits, 384
Strontium silicate, 456
Sulfur, 177
Superheated drop detectors, 225
Surveillance, 45, 104, 132, 464, 515
aging, 38
capsule dosimetry, 94
capsules, 358
coupon materials, 523
damage, 140
ex-vessel, 392
Fast Flux Test Facility program, 523
hydrogen, 271
Koeberg, 155
MCBEND, 123, 323, 384
packets, Charpy, 215
program optimization, 464
standards, 9, 19
VENUS, 323, 333
Yankee Atomic Electric Company program, 114

T

Temperature effects, 509
Temperature monitoring, 195
Test Reactor Embrittlement Data Base, 515
Thermal aging, 195
Thermal fluence rate, 598
Thermoluminescence, 423, 433, 792
detector, 456, 578
THREEDANT, 376
3DDT, 588
Three dimensional test, 343, 358, 376
Threshold activation rates, 323
Threshold reaction, 720
TIHANGE-2 Surveillance System, 65
Titanium, 233
Tokamak, 792
TORE-SUPRA, 792
Track recorders, 195
Transmutation, 500, 782, 800
Transport analysis model, 744
Transport calculations, 140
MCNP code, 368
neutron, 55
Trend curves, 94, 533
TRIPOLI, 132
Tritium
formation, 546, 761
retention, 761
Tungsten, 773
Two-dimensional neutron and gamma calculations, 608

U

Ultra-high flux beam, 568
Uncertainties, 290
Uncertainty assessment, 85, 94, 490
matrices, evaluation of, 75
Uncertainty propagation, 310
Upper shelf energy, 533
Uranium, 744
fission spectrum, 670, 720

V

Vanadium, 233
VENUS, 323, 333
VITAMIN-B6, 660
VITAMIN-C, 392
Voids, 533
VVER reactor, 55, 464
VVER-440 reactor, 29, 38, 45
VVER-1000, 343

W

Water loop, pressurized, 255
Water moderators, spherical, 368
Welds, 38
WIMS-AECL, 588
WWER vessel materials, 480

X

X-ray fluorescence, total reflection, 800

Y

Yankee Atomic Electric Company, 114, 628
Yankee Rowe reactor, 464

Z

Zinc, 500