

Author Index

A

Aarholt, Thomas, 93–126
 Abolhassani, Sousan, 614–644
 Adamson, Ronald, 645–675,
 748–795
 Ali, Liaqat, 1224–1251
 Alvarez-Holston, Anna-Maria,
 1224–1251
 Ambard, Antoine, 180–213, 214–239,
 312–349, 415–447, 823–856,
 1039–1058
 Andersson, Vendi, 965–982
 Andrén, Hans-Olof, 796–822
 Anghel, Clara, 281–311
 Atwood, Andrew, 725–747, 1011–1038

B

Bagot, Paul, 93–126
 Bajaj, Ram, 448–490
 Balak, Juraj, 965–982
 Baldacchino, Gérard, 415–447
 Balogh, Levente, 691–724
 Barberis, Pierre, 127–150
 Barsy, Eszter, 1093–1113
 Baxter, Felicity, 491–523
 Becker, Richard, 281–311
 Bennett, Peter, 614–644
 Berdin, Clotilde, 350–384
 Beuzet, Émilie, 1039–1058
 Bickel, Grant, 938–964
 Billone, Michael, 1252–1285
 Bisor, Caroline, 350–384
 Blat-Yrieix, Martine, 350–384, 415–447
 Bono, Matthew, 180–213
 Bossis, Philippe, 385–414, 415–447,
 823–856
 Bourlier, Florent, 180–213

Brachet, Jean-Christophe, 240–280
 Bradley, Luke, 151–179
 Buyers, Andrew, 938–964,
 1136–1166

C

Cai, Lu, 725–747
 Cai, Zhonghou, 385–414, 524–554
 Cantonwine, Paul, 645–675,
 909–937
 Chabretou, Valérie, 823–856
 Chakravartty, Jayanta Kumar,
 1224–1251
 Chen, Jen-Hung, 748–795
 Chen, Jiaxin, 281–311
 Chosson, Raphaël, 240–280
 Christensen, Mikael, 645–675
 Cinbiz, Nedim, 1252–1285
 Colas, Kimberly, 385–414, 415–447
 Cole-Baker, Aidan, 491–523
 Coleman, Christopher, 1136–1166,
 1224–1251
 Comstock, Robert, 312–349
 Couet, Adrien, 312–349
 Crépin, Jerome, 240–280
 Csordás, Anna Pintér, 1093–1113

D

Daniel, Christopher, 151–179
 Darby, Edward, 491–523, 796–822
 Daymond, Mark, 691–724
 DeAbreu, Robert, 938–964
 Donnikov, Vladimir, 983–1010
 Donohue, Stephen, 938–964
 Doriot, Sylvie, 823–856
 Douglas, Stephen, 676–690
 Dumbill, Simon, 796–822

Dunn, Kris, 938–964
 Duriez, Christian, 1059–1092

E

Eremin, Sergey, 857–880
 Espeland, Marit, 614–644

F

Foster, John Paul, 725–747
 Frankel, Philipp, 93–126, 491–523,
 796–822
 Freeman, Clive, 645–675
 Fuketa, Toyoshi, 52–92
 Fukuda, Takuji, 748–795

G

Gaillac, Alexis, 127–150
 Garde, Anand, 614–644, 1011–1038
 Garner, Alistair, 93–126, 180–213,
 491–523
 Gass, Mhairi, 491–523
 Garnier, Jerome, 180–213
 Gilbon, Didier, 180–213, 748–795,
 823–856
 Gourgues-Lorenzon, Anne-Francoise,
 240–280
 Griffiths, Malcolm, 676–690, 938–964
 Grosse, Mirco, 1093–1113, 1114–1135
 Grovenor, Chris, 93–126
 Gruber, Jason, 448–490
 Gusev, Anatoly, 857–880, 983–1010

H

Hallstadius, Lars, 614–644, 645–675,
 748–795, 796–822
 Harte, Allan, 491–523, 796–822
 Haurais, Florian, 1039–1058

He, Zhang, 1224–1251
 Hilton, Vicky, 1136–1166
 Honniball, Peter, 151–179
 Horváth, Márta, 1093–1113
 Hózer, Zoltán, 1093–1113
 Hu, Jing, 93–126
 Hussey, Dennis, 281–311

I

Idarraga, Isabel, 415–447
 Inozemtsev, Victor, 1224–1251
 Ishimoto, Shinji, 748–795
 Iyer, Jayashri, 281–311

J

Jadernas, Daniel, 796–822
 Jenssen, Hakon, 614–644
 Jublot, Michael, 350–384, 385–414,
 415–447

K

Kaczorowski, Damien, 415–447
 Kaestner, Anders, 1114–1135
 Kammenzind, Bruce, 448–490,
 555–595, 1167–1191
 Karlsen, Torill Marie, 614–644
 Kasperski, Anne, 1059–1092
 Kesterson, Ron, 1192–1223
 Kis, Zoltán, 1093–1113
 Kobylansky, Gennady, 596–613,
 748–795
 Konkov, Viktor, 857–880
 Korinko, Paul, 1192–1223
 Kosihina, Julia, 983–1010
 Koss, Donald, 1252–1285
 Kucuk, Aylin, 524–554
 Kulacsy, Katalin, 1093–1113
 Kunstar, Mihály, 1093–1113

L

Lam, Poh-Sang, 1192–1223
 Latynin, Vyacheslav, 983–1010
 Le Saux, Matthieu, 240–280
 Limon, Roger, 180–213
 Lin, Yang-Pi, 881–908, 909–937
 Long, Fei, 691–724
 Lozano-Perez, Sergio, 93–126
 Lutz, Dan, 881–908, 909–937

M

Mader, Erik, 645–675
 Mahmood, Sheikh, 748–795
 Makarevicius, Vidas, 1224–1251
 Malgin, Andrey, 983–1010
 Mardon, Jean-Paul, 823–856
 Markelov, Vladimir, 596–613, 857–880, 983–1010, 1224–1251
 McRae, Glenn, 1136–1166
 Mermoux, Michel, 1059–1092
 Miro, Sandrine, 415–447
 Mitchell, David, 1011–1038
 Moody, Michael, 93–126
 Motta, Arthur, 19–51, 312–349, 524–554, 1252–1285
 Mueller, Andrew, 1011–1038
 Murgatroyd, Robert, 1–18

N

Nagase, Fumihisa, 52–92
 Nagy, Imre, 1093–1113
 Nguyen, Chi-Toan, 214–239
 Nikulina, Antonina, 983–1010
 Nordin, Heidi, 1136–1166
 Novikov, Vladimir, 596–613, 857–880, 983–1010
 Novotny, Tamás, 1093–1113

O

Oberländer, Barbara, 614–644, 965–982
 Obukhov, Alexander, 596–613, 748–795, 857–880
 Onimus, Fabien, 180–213

P

Pan, Guirong, 725–747, 1011–1038
 Partezana, Jonna, 93–126, 1011–1038
 Pascal, Serge, 350–384
 Peregud, Michael, 857–880
 Perez-Feró, Erzsébet, 1093–1113
 Pokrovsky, Alexander, 857–880
 Preuss, Michael, 93–126, 151–179, 214–239, 491–523, 691–724, 796–822
 Proff, Christian, 614–644

Q

Quinta da Fonseca, João, 151–179, 214–239

R

Race, Christopher, 796–822
 Ramanathan, Lalgudi, 1224–1251
 Rishel, Douglas, 555–595
 Rogerson, Allan, 1–18
 Romero, Javier, 214–239, 491–523, 796–822, 1011–1038
 Roth, Maria, 1224–1251

S

Schillinger, Burkhard, 1114–1135
 Setiadinata, Brian, 93–126
 Shelepov, Ivan, 983–1010

Shevyakov, Alexandr, 596–613,
857–880
Shivprasad, Aditya, 524–554
Simoni, Éric, 1039–1058
Sindelar, Robert, 1192–1223
Slater, Thomas, 491–523
Smee, James, 448–490
Soniak-Defresne, Annie, 180–213,
823–856
Steinbrück, Martin, 1039–1058,
1114–1135
Stevens, Jacqueline, 281–311
Sundell, Gustav, 796–822
Szabó, Péter, 1093–1113
Szentmiklósi, László, 1093–1113

T

Tejland, Pia, 491–523, 796–822
Thuvander, Mattias, 796–822
Ton-That, Marc, 823–856
Topping, Matthew, 491–523,
796–822
Torkhani, Mohamed, 1039–1058
Tupin, Marc, 350–384, 385–414,
415–447
Turque, Isabelle, 240–280

V

Vanderberghe, Valérie, 240–280
Van Nieuwenhove, Rudi, 965–982
Veleva, Lyubomira, 614–644
Verhaeghe, Bénédicte, 823–856
Verlet, Romain, 385–414, 415–447
Vilalta-Clemente, Arantxa, 93–126
Vimi, András, 1093–1113

W

Walters, Lori, 676–690, 938–964
Wells, Daniel, 281–311
White, David, 881–908, 909–937
Wilkinson, Angus, 93–126
Wimmer, Erich, 645–675
Wolf, Walter, 645–675
Wolski, Krzysztof, 385–414, 415–447

Y

Yagnik, Suresh, 524–554, 748–795
Yao, Zhongwen, 691–724

Z

Zumpicchiati, Guillaume, 350–384

Subject Index

A

Accident-tolerant fuel, 19–51, 965–982
 Alloying elements, 524–554, 645–675, 748–795
 Anisotropy, 180–213
 Annealed (swaged) single crystals, 1–18
 Advanced Test Reactor corrosion, 448–490, 555–595
 Autoclave testing, 281–311, 811–908
 Autoclave-formed oxide, 491–523

B

BOR-60 MTR, 748–795
 BWR, 491–523, 796–822, 909–937

C

CANDU reactors, 151–179
 Chemical mapping, 491–523
 Cold-rolled Zircaloy-4, 214–239
 c-component loops, 823–856
 Constant displacement method, 1224–1252
 Corrosion, 19–51, 93–126, 312–349, 350–384, 415–447, 555–595, 857–880, 909–937, 965–982, 1039–1058
 kinetics, 19–51, 380–384
 performance, 491–523
 Cracking, detection/measurement, 1224–1251

D

Defects, 645–675, 691–724, 1167–1191

Deformed (swaged) single crystals, 1–18
 Delayed hydride cracking, 1224–1252
 Density functional theory, 645–675
 Differential scanning calorimetry, 1136–1166
 Discharged fuel clad, 1192–1223
 Dislocation density, 938–964
 Dislocation loop, 645–675, 691–724, 748–795, 796–822
 c-component loops, 823–856
 Dry storage, 1192–1223, 1224–1251

E

E110/E110G cladding, 1093–1113
 E110/E635 alloys, 596–613
 EBSD analysis, 151–179
 Embrittlement, 983–1010, 1093–1113

F

Fick's law, 19–51
 Finite element analysis, 127–150, 1192–1223
 Fission gas release, 52–92
 Fluence, 909–937
 Fuel behavior, 52–92
 Fuel cladding, 19–51, 52–92, 281–311, 596–613, 614–644, 965–982, 1011–1038, 1039–1058

G

Gamma radiation, 555–595
 Grain boundaries, 350–384
 Grain morphology/microstructure, 1192–1223

H

Halden corrosion rates, 555–595
 Halden reactor, 614–644, 965–982, 1136–1166
 Hot extrusion, 127–150
 Hot-cell examinations, 881–908
 Hydride-assisted PCMI failure, 52–92
 Hydrides, 52–92, 350–384, 1192–1223, 1224–1251
 orientation, 1252–1285
 precipitation, biaxial stress, 19–51
 rim thickness, 52–92
 Hydrogen, 240–280, 725–747, 983–1010, 1093–1113, 1167–1191, 1224–1251
 absorption, 1114–1135
 effect, 748–795
 pickup, 19–51, 93–126, 281–311, 312–349, 524–554, 881–908, 909–937

I

In-pile irradiation, 415–447
 In-reactor corrosion, 909–937
 In-reactor creep strength, 1224–1251
 In-reactor operation, 881–908
 Ion irradiation, 385–414, 415–447
 Iron defects, 645–675
 Irradiated cladding, 1252–1285
 Irradiation, 415–447, 491–523, 823–856, 857–880, 1136–1166
 creep, 725–747, 909–937
 damage, 676–690
 growth, 1–18, 645–675, 725–747, 748–795, 796–822, 909–937
 ion, 385–414, 415–447
 proton, 491–523, 796–822
 Isotopic exposure, 415–447
 Isotropic hardenings, 180–213

K

K_{IH} source, 1224–1251
 Kinematic hardenings, 180–213

L

Long-term irradiation growth, 1–18
 LOCA, 52–92, 214–239, 240–280, 983–1010, 1011–1038, 1093–1113, 1114–1135

M

M5, 415–447, 1252–1285
 Mechanical properties, 19–15, 214–239, 240–280, 1192–1223
 Microbeam XANES, 491–523
 Microhardness, 983–1010
 Microstructure, 1–18, 448–490, 596–613, 881–908, 983–1010
 Model/commercial zirconium alloys, 796–822
 Model zirconium-tin alloys, 1–18

N

Neutron irradiation, 448–490, 938–964, 1167–1191
 Neutron oxides, 491–523
 Neutron radiography, 1093–1113, 1114–1135
 Nonirradiated oxides, 491–523
 NSF, 909–937
 Nuclear reactor, operation, 596–613
 Nuclear safety research, 52–92

O

Optical metallography, 983–1010
 Oxidation, 1059–1092, 1093–1113
 Oxidation state analysis, 524–554
 Oxide grains, 350–384

Oxide layers, 415–447, 524–554
 Oxide microstructure, 19–51, 93–126, 491–523
 Oxide surface, XPS analyses, 415–447
 Oxidized cladding, 240–280

P

PCMI failure, 52–92
 Phase transformation, 151–179
 Pinch failure, 1192–1223
 Polycrystalline zirconium, 1–18
 Polycrystalline modeling, 180–213
 Pool storage, 1224–1251
 Porosimetry, 491–523, 1039–1058
 Post-quench ductility, 52–92, 1011–1038
 PWR, 281–311, 448–490
 PWR-simulated conditions, 415–447
 Proton irradiation, 491–523, 796–822
 Proton-irradiated autoclave-formed oxide, 491–523
 Pure steam, 1039–1058
 Pure zirconium, 645–675

Q

Quaternary alloys, 823–856
 Quartz pellet testing characterization tests, 1192–1223

R

Radiation damage, 19–51, 676–690
 Radioactive decay, 1224–1251
 Raman spectroscopy, 415–447, 1059–1092
 Reactivity-initiated accident, 52–92
 Recrystallization, 127–150, 180–213
 Reoxidation, 415–447

S

Scanning precession electron diffraction, 491–523
 Secondary creep, 938–964
 SIMS analyses, 415–447
 Second-phase particle, 93–126, 448–490, 748–795
 Solubility, 1167–1191
 Soret effect, 19–51
 Spent nuclear fuel, 1224–1251
 Stress corrosion cracking, 1224–1251
 Stress orientation, 1192–1223
 Supercritical water, usage, 19–51

T

Temperature differentials, 1192–1223
 TSS, 52–92, 1136–1166
 Tetragonal-phase stability, 491–523
 Texture, 151–179
 Thermal creep, 909–937
 TiAlN multilayer coatings, usage, 19–51
 Total diameter strain slope, hydrogen, 725–747
 Transient annealing, 1059–1092
 TEM, 19–51, 93–126, 415–447, 491–523, 614–644, 691–724
 observations, 19–51
 usage, 415–447

X

XANES, 491–523, 532–541
 XPS, 415–447
 X-ray diffraction, 214–239, 691–724, 1252–1285
 diffraction line-profile analysis
 methods, 691–724

Z

Zircaloy, 1–18, 19–51, 127–150, 645–675, 965–982, 1059–1092
 alloys, 151–179, 350–384
 corrosion, 448–490, 555–595
 high-temperature oxidation, 1059–1092
 hydride precipitation, 350–384
 hydride reorientation, 1251–1285
 in-reactor accident conditions, 214–239
 oxide, 19–51, 350–384
 Zircaloy-2, 491–523, 524–554, 614–644, 796–82, 881–908, 909–937
 irradiation growth, 1–18
 Zircaloy-4, 214–239, 240–280, 281–311, 448–490, 555–595, 1059–1092, 1224–1251, 1252–1285
 Zirconium, reactor irradiation, 676–690

Zirconium alloys, 1–18, 180–213, 312–349, 614–644, 748–795, 796–822, 823–856, 1093–1113, 1192–1223, 1224–1251
 cladding materials, 1011–1038
 fuel cladding alloys, 93–126
 fuel cladding behavior, 983–1010
 fuel cladding performance, 19–51
 hot extrusion, 127–150
 hydrogen uptake, 1114–1135
 irradiation defects, 691–724
 Zirconium diffusion, 645–675
 Zirconium-niobium alloys, 151–179, 857–880
 ZIRLO, 19–51, 614–644
 cladding corrosion, 1039–1058
 Zr-1.0Nb, 725–747
 Zr-2.5Nb, hydrogen terminal solid solubility, 938–964, 1136–1166