

## Subject index

**Actinides (minor, excludes Plutonium, Thorium and Uranium)**

Lithium reduction of americium dioxide to generate americium metal, T. Usami, T. Kato, M. Kurata, T. Inoue, H.E. Sims, S.A. Beetham and J.A. Jenkins 304 (2002) 50

**Aluminum, Aluminum Alloys and Compounds**

Aqueous corrosion of aluminum-based nuclear fuel, M.D. Kaminski and M.M. Goldberg 304 (2002) 182

**Amorphization and Amorphous Materials**

Structural features and properties of lead–iron–phosphate nuclear wasteforms, S.T. Reis, M. Karabulut and D.E. Day  
Amorphization of MgAl<sub>2</sub>O<sub>4</sub> spinel using 1.5 MeV Xe<sup>+</sup> ions under cryogenic irradiation conditions, K.E. Sickafus, N. Yu and M. Nastasi 304 (2002) 87  
304 (2002) 237

**Analytical Instruments and Methods (not listed elsewhere)**

Structural features and properties of lead–iron–phosphate nuclear wasteforms, S.T. Reis, M. Karabulut and D.E. Day  
Depletion of Fe and Cr within precipitates during Zircaloy-4 oxidation, J.H. Baek and Y.H. Jeong 304 (2002) 87  
304 (2002) 107

**Carbon**

Sputtering and ion-induced electron emission of graphite under high-dose nitrogen bombardment, A.M. Borisov, W. Eckstein and E.S. Mashkova 304 (2002) 15

**Cavities (includes Voids, Holes)**

Kinetics of nucleation and coarsening of colloids and voids in crystals under irradiation, V.I. Dubinko, A.A. Turkin, D.I. Vainshtein and H.W. den Hartog 304 (2002) 117

**Ceramics (not listed elsewhere)**

Crystal chemistry of uranium (V) and plutonium (IV) in a titanate ceramic for disposition of surplus fissile material, J.A. Fortner, A.J. Kropf, R.J. Finch, A.J. Bakel, M.C. Hash and D.B. Chamberlain  
Amorphization of MgAl<sub>2</sub>O<sub>4</sub> spinel using 1.5 MeV Xe<sup>+</sup> ions under cryogenic irradia-

tion conditions, K.E. Sickafus, N. Yu and M. Nastasi

304 (2002) 237

**Chemical Reactions (includes Electrochemical and Thermochemical Reactions)**

Oxidation behavior of modified SUS316 (PNC316) stainless steel under low oxygen partial pressure, I. Sato, M. Takaki, T. Arima, H. Furuya, K. Idemitsu, Y. Inagaki, M. Momoda and T. Namekawa  
Lithium reduction of americium dioxide to generate americium metal, T. Usami, T. Kato, M. Kurata, T. Inoue, H.E. Sims, S.A. Beetham and J.A. Jenkins 304 (2002) 21  
304 (2002) 50

**Cladding Materials**

Solubility of hydrogen in Zircaloy-4: irradiation induced increase and thermal recovery, P. Vizcaino, A.D. Banchik and J.P. Abriata  
Depletion of Fe and Cr within precipitates during Zircaloy-4 oxidation, J.H. Baek and Y.H. Jeong 304 (2002) 96  
304 (2002) 107  
Determination of Fe and Cr content in  $\alpha$ -Zr solid solution of Zircaloy-4 with different heat-treated states, C. Li, B. Zhou, W. Zhao, P. Li, Q. Peng, S. Ying and B. Shen 304 (2002) 134  
Phase constitution and steam corrosion resistance of binary Zr–S alloys, D. Charquet 304 (2002) 246

**Compatibility and Corrosion (includes Stress Corrosion Cracking)**

Influence of dilute silicon addition on the oxidation resistance and tensile properties of modified Zircaloy-4, H.S. Hong, S.J. Kim and K.S. Lee  
Oxidation behavior of modified SUS316 (PNC316) stainless steel under low oxygen partial pressure, I. Sato, M. Takaki, T. Arima, H. Furuya, K. Idemitsu, Y. Inagaki, M. Momoda and T. Namekawa  
Structural features and properties of lead–iron–phosphate nuclear wasteforms, S.T. Reis, M. Karabulut and D.E. Day  
Depletion of Fe and Cr within precipitates during Zircaloy-4 oxidation, J.H. Baek and Y.H. Jeong 304 (2002) 21  
304 (2002) 87  
304 (2002) 107

- Aqueous corrosion of aluminum-based nuclear fuel, M.D. Kaminski and M.M. Goldberg  
304 (2002) 182
- Oxidation behavior of U-10 wt% Mo alloy in air at 473-773 K, K.H. Kang, S.H. Kim, K.K. Kwak and C.K. Kim  
304 (2002) 242
- Phase constitution and steam corrosion resistance of binary Zr-S alloys, D. Charquet  
304 (2002) 246
- Electron Irradiation**
- Kinetics of nucleation and coarsening of colloids and voids in crystals under irradiation, V.I. Dubinko, A.A. Turkin, D.I. Vainshtein and H.W. den Hartog  
304 (2002) 117
- Fast Reactor Materials**
- Oxidation behavior of modified SUS316 (PNC316) stainless steel under low oxygen partial pressure, I. Sato, M. Takaki, T. Arima, H. Furuya, K. Idemitsu, Y. Inagaki, M. Momoda and T. Namekawa  
304 (2002) 21
- Molecular aspects of the  $\beta$ -decay in Tc clusters, M. Defranceschi and G. Berthier  
304 (2002) 204
- Low-temperature irradiation behavior of uranium-molybdenum alloy dispersion fuel, M.K. Meyer, G.L. Hofman, S.L. Hayes, C.R. Clark, T.C. Wienczek, J.L. Snelgrove, R.V. Strain and K.-H. Kim  
304 (2002) 221
- Fission Products**
- An effective method for calculation of diffusive flow in spherical grains, P. Hermansson and A.R. Massih  
304 (2002) 212
- Molecular aspects of the  $\beta$ -decay in Tc clusters, M. Defranceschi and G. Berthier  
304 (2002) 221
- Delayed hydride cracking in Zr-2.5Nb pressure tube material, R.N. Singh, N. Kumar, R. Kishore, S. Roychaudhury, T.K. Sinha and B.P. Kashyap  
304 (2002) 221
- Fracture and Fracture Toughness**
- Kinetics of nucleation and coarsening of colloids and voids in crystals under irradiation, V.I. Dubinko, A.A. Turkin, D.I. Vainshtein and H.W. den Hartog  
304 (2002) 117
- Effect of chromium, tungsten, tantalum, and boron on mechanical properties of 5-9Cr-WVTaB steels, R.L. Klueh, D.J. Alexander and M.A. Sokolov  
304 (2002) 139
- Delayed hydride cracking in Zr-2.5Nb pressure tube material, R.N. Singh, N. Kumar, R. Kishore, S. Roychaudhury, T.K. Sinha and B.P. Kashyap  
304 (2002) 189
- Fuels and Fuel Elements**
- Oxidation behavior of modified SUS316 (PNC316) stainless steel under low oxygen partial pressure, I. Sato, M. Takaki, T. Arima, H. Furuya, K. Idemitsu, Y. Inagaki, M. Momoda and T. Namekawa  
304 (2002) 21
- Modelling intragranular fission gas release in irradiation of sintered LWR UO<sub>2</sub> fuel, P. Löösönen  
304 (2002) 29
- Aqueous corrosion of aluminum-based nuclear fuel, M.D. Kaminski and M.M. Goldberg  
304 (2002) 182
- Low-temperature irradiation behavior of uranium-molybdenum alloy dispersion fuel, M.K. Meyer, G.L. Hofman, S.L. Hayes, C.R. Clark, T.C. Wienczek, J.L. Snelgrove, R.V. Strain and K.-H. Kim  
304 (2002) 221
- Oxidation behavior of U-10 wt% Mo alloy in air at 473-773 K, K.H. Kang, S.H. Kim, K.K. Kwak and C.K. Kim  
304 (2002) 246
- Fusion Reactor Materials**
- Effect of chromium, tungsten, tantalum, and boron on mechanical properties of 5-9Cr-WVTaB steels, R.L. Klueh, D.J. Alexander and M.A. Sokolov  
304 (2002) 139
- Gamma Irradiation**
- Irradiation performance of polytetrafluoroethylene (Teflon<sup>®</sup>) in a mixed fast neutron and gamma radiation field, O.K. Harling, G.E. Kohse and K.J. Riley  
304 (2002) 83
- Helium**
- Helium bubble formation in 800 MeV proton-irradiated 304L stainless steel and alloy 718 during post-irradiation annealing, J. Chen, S. Romanzetti, W.F. Sommer and H. Ullmaier  
304 (2002) 1
- Hydrogen and Hydrides (includes Deuterium and Deuterides)**
- Delayed hydride cracking in Zr-2.5Nb pressure tube material, R.N. Singh, N. Kumar, R. Kishore, S. Roychaudhury, T.K. Sinha and B.P. Kashyap  
304 (2002) 189
- Ion Irradiation**
- Sputtering and ion-induced electron emission of graphite under high-dose nitrogen bombardment, A.M. Borisov, W. Eckstein and E.S. Mashkova  
304 (2002) 15
- Use of high energy ions for the mechanistic study of irradiation embrittlement in pressure vessel steels using Fe-Cu model alloys, K. Morita, S. Ishino, T. Tobita, Y. Chimi, N. Ishikawa and A. Iwase  
304 (2002) 153
- Kinetics**
- Oxidation behavior of U-10 wt% Mo alloy in air at 473-773 K, K.H. Kang, S.H. Kim, K.K. Kwak and C.K. Kim  
304 (2002) 242
- Mathematical and Computational Methods**
- Molecular aspects of the  $\beta$ -decay in Tc clusters, M. Defranceschi and G. Berthier  
304 (2002) 212
- Mechanical Properties (not listed elsewhere)**
- Influence of dilute silicon addition on the oxidation resistance and tensile properties of modified Zircaloy-4, H.S. Hong, S.J. Kim and K.S. Lee  
304 (2002) 8
- Effect of chromium, tungsten, tantalum, and boron on mechanical properties of

5–9Cr–WVTaB steels, R.L. Klueh, D.J. Alexander and M.A. Sokolov	304 (2002) 139	Solubility of hydrogen in Zircaloy-4: irradiation induced increase and thermal recovery, P. Vizcaino, A.D. Banchik and J.P. Abriata	304 (2002) 96
Use of high energy ions for the mechanistic study of irradiation embrittlement in pressure vessel steels using Fe–Cu model alloys, K. Morita, S. Ishino, T. Tobita, Y. Chimi, N. Ishikawa and A. Iwase	304 (2002) 153	Determination of Fe and Cr content in $\alpha$ -Zr solid solution of Zircaloy-4 with different heat-treated states, C. Li, B. Zhou, W. Zhao, P. Li, Q. Peng, S. Ying and B. Shen	304 (2002) 134
<b>Metals, Alloys and Compounds (not listed elsewhere)</b>		Thermodynamic assessment of the uranium–oxygen system, C. Guéneau, M. Baichi, D. Labroche, C. Chatillon and B. Sundman	304 (2002) 161
Phase relations in the quaternary Fe–Pu–U–Zr system, K. Nakamura, T. Ogata, M. Kurata, T. Yokoo and M.A. Mignanelli	304 (2002) 63	Molecular aspects of the $\beta$ -decay in Tc clusters, M. Defranceschi and G. Berthier	304 (2002) 212
<b>Microstructure and Texture (excludes by Irradiation)</b>		Phase constitution and steam corrosion resistance of binary Zr–S alloys, D. Charquet	304 (2002) 246
Thermally and plastically induced residual strains in textured Zircaloy-2 plate, T.M. Holden, J.H. Root, R.A. Holt and P.A. Turner	304 (2002) 73	<b>Plutonium, Plutonium Alloys and Compounds</b>	
<b>Molybdenum, Molybdenum Alloys and Compounds</b>		Crystal chemistry of uranium (V) and plutonium (IV) in a titanate ceramic for disposition of surplus fissile material, J.A. Fortner, A.J. Kropf, R.J. Finch, A.J. Bakel, M.C. Hash and D.B. Chamberlain	304 (2002) 56
Low-temperature irradiation behavior of uranium–molybdenum alloy dispersion fuel, M.K. Meyer, G.L. Hofman, S.L. Hayes, C.R. Clark, T.C. Wieneck, J.L. Snelgrove, R.V. Strain and K.-H. Kim	304 (2002) 221	Phase relations in the quaternary Fe–Pu–U–Zr system, K. Nakamura, T. Ogata, M. Kurata, T. Yokoo and M.A. Mignanelli	304 (2002) 63
<b>Neutron Irradiation</b>		<b>Polymers</b>	
Irradiation performance of polytetrafluoroethylene (Teflon <sup>®</sup> ) in a mixed fast neutron and gamma radiation field, O.K. Harling, G.E. Kohse and K.J. Riley	304 (2002) 83	Irradiation performance of polytetrafluoroethylene (Teflon <sup>®</sup> ) in a mixed fast neutron and gamma radiation field, O.K. Harling, G.E. Kohse and K.J. Riley	304 (2002) 83
Low-temperature irradiation behavior of uranium–molybdenum alloy dispersion fuel, M.K. Meyer, G.L. Hofman, S.L. Hayes, C.R. Clark, T.C. Wieneck, J.L. Snelgrove, R.V. Strain and K.-H. Kim	304 (2002) 221	<b>Powder Processes and Products</b>	
<b>Nickel, Nickel Alloys and Compounds</b>		Modelling intragranular fission gas release in irradiation of sintered LWR UO <sub>2</sub> fuel, P. Löösönen	304 (2002) 29
Helium bubble formation in 800 MeV proton-irradiated 304L stainless steel and alloy 718 during post-irradiation annealing, J. Chen, S. Romanzetti, W.F. Sommer and H. Ullmaier	304 (2002) 1	Powder synthesis and sintering of high density thoria–yttria ceramics, I.C. Cosentino and R. Muccillo	304 (2002) 129
<b>Nuclear Properties</b>		<b>Precipitates and Precipitation</b>	
Irradiation performance of polytetrafluoroethylene (Teflon <sup>®</sup> ) in a mixed fast neutron and gamma radiation field, O.K. Harling, G.E. Kohse and K.J. Riley	304 (2002) 83	Depletion of Fe and Cr within precipitates during Zircaloy-4 oxidation, J.H. Baek and Y.H. Jeong	304 (2002) 107
<b>Oxides</b>		<b>Processing</b>	
Lithium reduction of americium dioxide to generate americium metal, T. Usami, T. Kato, M. Kurata, T. Inoue, H.E. Sims, S.A. Beetham and J.A. Jenkins	304 (2002) 50	Lithium reduction of americium dioxide to generate americium metal, T. Usami, T. Kato, M. Kurata, T. Inoue, H.E. Sims, S.A. Beetham and J.A. Jenkins	304 (2002) 50
<b>Phase Equilibria (includes Constitution, Phase Stability, Phase Instability)</b>		Thermally and plastically induced residual strains in textured Zircaloy-2 plate, T.M. Holden, J.H. Root, R.A. Holt and P.A. Turner	304 (2002) 73
Phase relations in the quaternary Fe–Pu–U–Zr system, K. Nakamura, T. Ogata, M. Kurata, T. Yokoo and M.A. Mignanelli	304 (2002) 63	<b>Proton Irradiation</b>	
Helium bubble formation in 800 MeV proton-irradiated 304L stainless steel and alloy 718 during post-irradiation annealing,			

J. Chen, S. Romanzetti, W.F. Sommer and H. Ullmaier	304 (2002) 1	bombardment, A.M. Borisov, W. Eckstein and E.S. Mashkova	304 (2002) 15
<b>Radiation Effects: Extended Defects, Microstructures</b>			
Solubility of hydrogen in Zircaloy-4: irradiation induced increase and thermal recovery, P. Vizcaino, A.D. Banchik and J.P. Abriata	304 (2002) 96	Thermally and plastically induced residual strains in textured Zircaloy-2 plate, T.M. Holden, J.H. Root, R.A. Holt and P.A. Turner	304 (2002) 73
Amorphization of MgAl <sub>2</sub> O <sub>4</sub> spinel using 1.5 MeV Xe <sup>+</sup> ions under cryogenic irradiation conditions, K.E. Sickafus, N. Yu and M. Nastasi	304 (2002) 237	Kinetics of nucleation and coarsening of colloids and voids in crystals under irradiation, V.I. Dubinko, A.A. Turkin, D.I. Vainshtein and H.W. den Hartog	304 (2002) 117
<b>Radiation Effects: Physical Properties</b>			
Amorphization of MgAl <sub>2</sub> O <sub>4</sub> spinel using 1.5 MeV Xe <sup>+</sup> ions under cryogenic irradiation conditions, K.E. Sickafus, N. Yu and M. Nastasi	304 (2002) 237	Delayed hydride cracking in Zr-2.5Nb pressure tube material, R.N. Singh, N. Kumar, R. Kishore, S. Roychaudhury, T.K. Sinha and B.P. Kashyap	304 (2002) 189
<b>Rare Earths</b>			
Molecular aspects of the β-decay in Tc clusters, M. Defranceschi and G. Berthier	304 (2002) 212	An effective method for calculation of diffusive flow in spherical grains, P. Hermansson and A.R. Massih	304 (2002) 204
<b>Reprocessing</b>			
Lithium reduction of americium dioxide to generate americium metal, T. Usami, T. Kato, M. Kurata, T. Inoue, H.E. Sims, S.A. Beetham and J.A. Jenkins	304 (2002) 50	<b>Thermodynamic Properties</b>	
Phase relations in the quaternary Fe-Pu-U-Zr system, K. Nakamura, T. Ogata, M. Kurata, T. Yokoo and M.A. Mignanelli			
Thermodynamic assessment of the uranium-oxygen system, C. Guéneau, M. Baichi, D. Labroche, C. Chatillon and B. Sundman			
Mass-spectrometric determination of oxygen potential of hypostoichiometric urania-yttria solid solution, K. Nakajima, T. Ohmichi and Y. Arai			
<b>Steels, Austenitic</b>			
Helium bubble formation in 800 MeV proton-irradiated 304L stainless steel and alloy 718 during post-irradiation annealing, J. Chen, S. Romanzetti, W.F. Sommer and H. Ullmaier	304 (2002) 1	<b>Thorium, Thorium Alloys and Compounds</b>	
Powder synthesis and sintering of high density thoria- yttria ceramics, I.C. Cosentino and R. Muccillo			
<b>Steels, Austenitic, Stabilized</b>			
Oxidation behavior of modified SUS316 (PNC316) stainless steel under low oxygen partial pressure, I. Sato, M. Takaki, T. Arima, H. Furuya, K. Idemitsu, Y. Inagaki, M. Momoda and T. Namekawa	304 (2002) 21	<b>Uranium, Uranium Alloys</b>	
Aqueous corrosion of aluminum-based nuclear fuel, M.D. Kaminski and M.M. Goldberg			
Low-temperature irradiation behavior of uranium-molybdenum alloy dispersion fuel, M.K. Meyer, G.L. Hofman, S.L. Hayes, C.R. Clark, T.C. Wiencek, J.L. Snelgrove, R.V. Strain and K.-H. Kim			
Oxidation behavior of U-10 wt% Mo alloy in air at 473–773 K, K.H. Kang, S.H. Kim, K.K. Kwak and C.K. Kim			
<b>Steels, Ferritic, Pressure Vessel</b>			
Use of high energy ions for the mechanistic study of irradiation embrittlement in pressure vessel steels using Fe-Cu model alloys, K. Morita, S. Ishino, T. Tobita, Y. Chimi, N. Ishikawa and A. Iwase	304 (2002) 153	<b>Uranium Oxides and Compounds</b>	
Modelling intragranular fission gas release in irradiation of sintered LWR UO <sub>2</sub> fuel, P. Löösönen			
Crystal chemistry of uranium (V) and plutonium (IV) in a titanate ceramic for disposition of surplus fissile material, J.A. Fortner, A.J. Kropf, R.J. Finch, A.J. Bakel, M.C. Hash and D.B. Chamberlain			
<b>Steels, Ferritic/Martensitic, Low Activation</b>			
Effect of chromium, tungsten, tantalum, and boron on mechanical properties of 5–9Cr-WVTaB steels, R.L. Klueh, D.J. Alexander and M.A. Sokolov	304 (2002) 139	304 (2002) 29	
<b>Surface Effects</b>			
Sputtering and ion-induced electron emission of graphite under high-dose nitrogen	304 (2002) 56	304 (2002) 221	

Phase relations in the quaternary Fe–Pu–U–Zr system, K. Nakamura, T. Ogata, M. Kurata, T. Yokoo and M.A. Mignanelli  
304 (2002) 63

Thermodynamic assessment of the uranium–oxygen system, C. Guéneau, M. Baichi, D. Labroche, C. Chatillon and B. Sundman  
304 (2002) 161

Mass-spectrometric determination of oxygen potential of hypostoichiometric urania–yttria solid solution, K. Nakajima, T. Ohmichi and Y. Arai  
304 (2002) 176

#### **Waste Materials**

Crystal chemistry of uranium (V) and plutonium (IV) in a titanate ceramic for disposition of surplus fissile material, J.A. Fortner, A.J. Kropf, R.J. Finch, A.J. Bakel, M.C. Hash and D.B. Chamberlain  
Structural features and properties of lead–iron–phosphate nuclear wasteforms, S.T. Reis, M. Karabulut and D.E. Day  
304 (2002) 56

#### **Waste: Behavior in Storage**

Kinetics of nucleation and coarsening of colloids and voids in crystals under irradiation, V.I. Dubinko, A.A. Turkin, D.I. Vainshtein and H.W. den Hartog  
Aqueous corrosion of aluminum-based nuclear fuel, M.D. Kaminski and M.M. Goldberg  
Molecular aspects of the  $\beta$ -decay in Tc clusters, M. Defranceschi and G. Berthier  
304 (2002) 117

<b>X-ray Techniques and Applications</b> Structural features and properties of lead–iron–phosphate nuclear wasteforms, S.T. Reis, M. Karabulut and D.E. Day 304 (2002) 87	<b>Zirconium, Zirconium Alloys</b> Influence of dilute silicon addition on the oxidation resistance and tensile properties of modified Zircaloy-4, H.S. Hong, S.J. Kim and K.S. Lee 304 (2002) 8
Thermally and plastically induced residual strains in textured Zircaloy-2 plate, T.M. Holden, J.H. Root, R.A. Holt and P.A. Turner 304 (2002) 73	Solubility of hydrogen in Zircaloy-4: irradiation induced increase and thermal recovery, P. Vizcaino, A.D. Banchik and J.P. Abriata 304 (2002) 96
Depletion of Fe and Cr within precipitates during Zircaloy-4 oxidation, J.H. Baek and Y.H. Jeong 304 (2002) 107	Determination of Fe and Cr content in $\alpha$ -Zr solid solution of Zircaloy-4 with different heat-treated states, C. Li, B. Zhou, W. Zhao, P. Li, Q. Peng, S. Ying and B. Shen 304 (2002) 134
Phase constitution and steam corrosion resistance of binary Zr–S alloys, D. Charquet 304 (2002) 212	<b>Zirconium Hydrides and Compounds</b> Delayed hydride cracking in Zr–2.5Nb pressure tube material, R.N. Singh, N. Kumar, R. Kishore, S. Roychaudhury, T.K. Sinha and B.P. Kashyap 304 (2002) 189