



Contents

Proceedings of a Topical Conference on Plutonium and Actinides: Plutonium Futures – The Science 2008

Preface	ix	Materials science	
Condensed matter physics		Density-functional study of Zr-based actinide alloys, <i>A. Landa, P. Söderlind, P.E.A. Turchi, L. Vitos and A. Ruban</i>	68
Hyperfine interactions in the itinerant system UFeGa ₅ , <i>S. Kambe, H. Sakai, Y. Tokunaga, H. Chudo, H. Yasuoka, T.D. Matsuda, Y. Haga, S. Ikeda, A. Nakamura, E. Yamamoto, D. Aoki, Y. Homma, Y. Shiokawa and Y. Ōnuki</i>	1	First-principles modeling of He-clusters in UO ₂ , <i>Y. Yun, O. Eriksson and P.M. Oppeneer</i>	72
<i>d</i> -wave superconductive gap and related observables of PuCoGa ₅ , <i>G.A. Ummarino, N. Magnani, J.-C. Griveau, J. Rebizant and R. Caciuffo</i>	4	Molecular dynamics simulation of helium–vacancy interaction in plutonium, <i>B. Ao, X. Wang, W. Hu and J. Yang</i>	75
Photoelectron spectroscopy study of PuCoGa ₅ thin films, <i>R. Eloirdi, L. Havela, T. Gouder, A. Shick, J. Rebizant, F. Huber and R. Caciuffo</i>	8	Molecular dynamics characterization of thermodynamic and mechanical properties of Pu as dependent upon alloying additions and defects concentration. Part I, <i>V.V. Dremov, A.V. Karavaev, S.I. Samarin, F.A. Sapozhnikov, M.A. Zocher and D.L. Preston</i>	79
Crystal structure and physical properties of PuPd ₅ Al ₂ , <i>J.-C. Griveau, K. Gofryk, E. Colineau and J. Rebizant</i>	11	A hybrid model of primary radiation damage in crystals, <i>S.I. Samarin and V.V. Dremov</i>	83
Determination of the clean 4f peak shape in XPS for plutonium metal, <i>P. Morrall, P. Roussel, L. Jolly, A. Brevet and F. Delaunay</i>	15	On dislocation mechanism of dynamic deformation of uranium, <i>V.A. Pushkov and D.V. Tsisar</i>	88
Calculations of thermodynamic properties of PuO ₂ by the first-principles and lattice vibration, <i>S. Minamoto, M. Kato, K. Konashi and Y. Kawazoe</i>	18	Evolving density and static mechanical properties in plutonium from self-irradiation, <i>B.W. Chung, S.R. Thompson, K.E. Lema, D.S. Hiromoto and B.B. Ebbinghaus</i>	91
Electronic-structure theory of plutonium chalcogenides, <i>A. Shick, L. Havela, T. Gouder and J. Rebizant</i>	21	Unconventional δ -phase stabilization in Pu–Ga alloys, <i>J.N. Mitchell, F.J. Freibert, D.S. Schwartz and M.E. Bange</i>	95
⁶⁹ Ga NMR and magnetic susceptibility in δ -phase of Pu _{1-x} Ga _x ($x = 0.05, x = 0.08$) alloys, <i>Yu. Piskunov, K. Mikhalev, A. Buzlukov, A. Gerashenko, S. Verkhovskii, V. Ogloblichev, V. Arkhipov, A. Korolev, Yu. Zouev and I. Svyatov</i>	25	SIMS characterisation of actinide isotopes in irradiated nuclear fuel, <i>L. Desgranges, B. Pasquet, Ch. Valot and I. Roure</i>	99
Current understanding of photoelectron spectra in plutonium systems, <i>L. Havela, A. Shick and T. Gouder</i>	28	Effective thermal conductivity of MOX raw powder, <i>K. Takeuchi, M. Kato, T. Sunaoshi, S. Aono and M. Kashimura</i>	103
Resolving the Pu electronic structure enigma: Past lessons and future directions, <i>J.G. Tobin, S.W. Yu, B.W. Chung and G.D. Waddill</i>	31	PDF analysis of PuAl alloys local structure, <i>C. Platteau, P. Bruckel, B. Ravat and F. Delaunay</i>	108
Pu neutron scattering studies – Magnetism and structure, <i>F. Trouw, J.J. Rhyne and J.N. Mitchell</i>	35	Phase diagram analysis of (U,Pu)O _{2-x} sub-system, <i>R. Agarwal, B.K. Sen and V. Venugopal</i>	112
X-ray diffraction study of pure plutonium under pressure, <i>Ph. Faure and C. Genestier</i>	38	Lattice parameters of (U, Pu, Am, Np)O _{2-x} , <i>M. Kato and K. Konashi</i>	117
Magnetic properties of Pu–Ga alloys, <i>V.E. Arkhipov, F.A. Kassan-Ogly, A.V. Korolev, S.V. Verkhovskii, Yu.N. Zuev and I.L. Svyatov</i>	42	Micro-mechanical characterisation of uranium, <i>D.W. Wheeler and S.T. Morris</i>	122
Magnetic and related properties of PuPdSn, <i>K. Gofryk, J.-C. Griveau, E. Colineau, R. Jardin, J. Rebizant, F. Wastin and R. Caciuffo</i>	46	EXAFS study of the structural phase transition in the americium zirconate pyrochlore, <i>P.M. Martin, R.C. Belin, P.J. Valenza and A.C. Scheinost</i>	126
Magnetic studies on CoU ₂ O ₆ and NiU ₂ O ₆ by magnetic susceptibility, specific heat and neutron diffraction measurements, <i>Y. Hinatsu, Y. Doi and A. Nakamura</i>	49	Nondestructive determination of plutonium by gamma spectrometry and neutron well coincidence counting, <i>C. Agarwal, S. Poi, T.N. Nathaniel, A. Mhatre, P.C. Kalsi, S. Singh and A. Goswami</i>	131
Inverse photoemission of uranium oxides, <i>P. Roussel, P. Morrall and S.J. Tull</i>	53	Development and synthesis of durable self-glowing crystals doped with plutonium, <i>B.E. Burakov, Ya.V. Domracheva, M.V. Zamoryanskaya, M.A. Petrova, V.M. Garbuzov, A.A. Kitsay and V.A. Zirlin</i>	134
Pressure effects in CeNi, <i>A. Mirmelstein, E. Clementyev, O. Kerbel, D. Kozlenko, Yu. Akshentsev, V. Voronin and I. Berger</i>	57	ADAGIO technique: From UO ₂ fuels to MOX fuels, <i>Y. Pontillon, L. Desgranges and A. Poulesquen</i>	137
Effective Hamiltonian for metallic Pu, <i>C.D. Batista</i>	60	Fuel cycle issues	
Kondo universality and energy scales in plutonium, <i>E. Clementyev and A. Mirmelstein</i>	63	Plutonium and the Indian atomic energy programme, <i>B. Raj</i>	142
The role of atomic correlations in the theoretical study of minor actinide ions, <i>G. Gaigalas, E. Gaidamauskas, Z. Rudzikas, N. Magnani and R. Caciuffo</i>	66	New concept of designing Pu and MA containing fuel for fast reactors, <i>A.M. Savchenko, I.I. Konovalov, A.V. Vatulin and E.M. Glagovsky</i>	148

Nuclear proliferation-resistance and safeguards for future nuclear fuel cycle, <i>Y. Kuno, N. Inoue and M. Senzaki</i>	153	Low-temperature immobilization of actinides and other components of high-level waste in magnesium potassium phosphate matrices, <i>S.E. Vinokurov, Yu.M. Kulyako, O.M. Slyuntchev, S.I. Rovny and B.F. Myasoedov</i>	189
Enhancing BWR proliferation resistance fuel with minor actinides, <i>G.S. Chang</i>	157	Decontamination of Zircaloy cladding hulls from spent nuclear fuel, <i>T.S. Rudisill</i>	193
Experience on mixed carbide fuels with high 'Pu' content for Indian fast breeder reactor – An overview, <i>A.K. Sengupta, U. Basak, A. Kumar, H.S. Kamath and S. Banerjee</i>	161	In-situ observation of a dendrite growth in an aqueous condition and a uranium deposition into a liquid cadmium cathode in an electrowinning system, <i>S.-H. Kim, D.-S. Yoon, Y.-J. You, S. Paek, J.-B. Shim, S.-W. Kwon, K.-R. Kim, H.-S. Chung, D.-H. Ahn and H.-S. Lee</i>	196
A practical fabrication method for the advanced heterogeneous fuel with magnesia containing minor actinides, <i>S. Miwa and M. Osaka</i>	165	Alpha-decay induced amorphization of Cm-doped Gd ₂ TiZrO ₇ , <i>S.V. Yudinsev, A.N. Lukinykh, S.V. Tomilin, A.A. Lizin and S.V. Stefanovsky</i>	200
Characterization of minor actinide mixed oxide fuel, <i>A.D. Neuman, C.C. Davis, T.A. Nothwang, F.G. Hampel, S.L. Voit, M.R. Lopez and A.C. Martinez</i>	168	Structure of mixed U(IV)–An(III) precursors synthesized by co-conversion methods (where An = Pu, Am or Cm), <i>S. Grandjean, B. Arab-Chapelet, A.C. Robisson, F. Abraham, Ph. Martin, J.-Ph. Dancausse, N. Herlet and C. Léorier</i>	204
Evaluation of high plutonia (44% PuO ₂) MOX as a fuel for fast breeder test reactor, <i>A.K. Sengupta, K.B. Khan, J. Panakkal, H.S. Kamath and S. Banerjee</i>	173	Development of fuel-model interfaces: Investigations by XPS, TEM, SEM and AFM, <i>S. Stumpf, A. Seibert, T. Gouder, F. Huber, T. Wiss and J. Römer</i>	208
Behavior of Si impurity in Np–Am–MOX fuel irradiated in the experimental fast reactor Joyo, <i>K. Maeda, S. Sasaki, M. Kato and Y. Kihara</i>	178	The plutonium/hydrogen reaction: The pressure dependence of reaction initiation time, <i>G.W. McGillivray, J.P. Knowles, I.M. Findlay and M.J. Dawes</i>	212
Electrochemical and thermodynamic properties of ytterbium trichloride in molten caesium chloride, <i>V. Smolenski, A. Novoselova, A. Bovet, A. Osipenko and M. Kormilitsyn</i>	184		
Direct carbothermic reduction of actinide oxalates: Example of Nd(III) oxalate–carbon mixtures conversion, <i>A. Handschuh, S. Dubois, S. Vaudez, S. Grandjean, G. Leturcq and F. Abraham</i>	186		