

- enargite by *Acidiithiobacillus ferrooxidans*, K. Sasaki, K. Takatsugi, K. Kaneko, N. Kozai, T. Ohnuki, O. H. Tuovinen, and T. Hirajima, *Hydrometallurgy*, 104, 424-431 (2010).
- 5) Biological nano-mineralization of Ce phosphate by *Saccharomyces cerevisiae*, Mingyu Jiang, T. Ohnuki, N. Kozai, K. Tanaka, Y. Suzuki, F. Sakamoto, E. Kamiishi, and S. Utsunomiya, *Chemical Geology*, 277, 61-69 (2010).
- 6) A specific Ce oxidation process during sorption of rare earth elements on biogenic Mn oxide produced by *Acremonium* sp. strain KR21-2, K. Tanaka, Y. Tani, Y. Takahashi, M. Tamizuru, Y. Suzuki, N. Kazai, and T. Ohnuki, *Geochimica et Cosmochimica Acta*, 74, 5463-5477 (2010).
- 7) Flavin mononucleotide mediated electron pathway for microbial U(VI) reduction, Y. Suzuki, Y. Kitatsujii, T. Ohnuki, and S. Tsujimura, *Physical Chemistry Chemical Physics*, 12, 10081-10087 (2010).

Research Group for Radiation and Biomolecular Science

Papers

- A novel technique using DNA denaturation to detect multiply induced single-strand breaks in a hydrated plasmid DNA molecule by X-ray and ${}^4\text{He}^{2+}$ ion irradiation, A. Yokoya, N. Shikazono, K. Fujii, M. Noguchi, and A. Urushibara, *Radiat. Protect. Dosim.* 143, 219-225 (2011).
- A model for analysis of the yield and the level of clustering of radiation-induced DNA strand breaks in hydrated plasmids, N. Shikazono, A. Yokoya, A. Urushibara, M. Noguchi, and K. Fujii, *Radiat. Protect. Dosim.* 143, 181-185 (2011).
- Pulse radiolysis study on free radical scavenger edaravone (3-methyl-1-phenyl-2-pyrazolin-5-one), 2: A comparative study on edaravone derivatives, K. Hata, M.Z. Lin, Y. Katsumura, Y. Muroya, H.Y. Fu, S. Yamashita, and H. Nakagawa, *J. Radiat. Res.* 52, 15-23 (2011).
- Fluorescent probe for steady-state radiolysis with heavy ions 1: LET effects and time dependence of OH yields, T. Maeyama, S. Yamashita, G. Baldacchino, M. Taguchi, A. Kimura, Y. Katsumura, and T. Murakami, *Radiat. Phys. Chem.* 80, 535-539 (2011).
- Temperature and density effects on the absorption maximum of solvated electrons in sub- and supercritical methanol, 7.Y. Yan, M. Lin, Y. Katsumura, Y. Muroya, S. Yamashita, K. Hata, J. Meesungnoen, J.-P. Jay-Gerin, *Can. J. Chem.* 88, 1026-1033 (2010).
- High rate crystallization of polycarbonate in spin cast thin film, S. Ata, T. Oka, C. He, T. Ohdaira, R. Suzuki, K. Ito, Y. Kobayashi, and T. Ougizawa, *J. Polym. Sci. Pt. B-Polym. Phys.* 48, 2148-2153 (2010).
- Ion beam irradiation effects on resist materials, T. Gowa, T. Takahashi, T. Oka, T. Murakami, A. Oshima, S. Tagawa, and M. Washio, *J. Photopolym. Sci. Technol.* 23, 399-404 (2010).
- OH radical in water studied by quantum beats on positron annihilation, J. J. Lee, T. Oka, and T. Hirade, *J. Phys. Conf. Ser.* 225, 012030-1-012030-5 (2010).
- Protective effects of silybin and analogues against X-ray radiation-induced damage, H. Fu, M. Lin, Y. Katsumura, A. Yokoya, K. Hata, Y. Muroya, K. Fujii, and N. Shikazono, *Acta Biochim. Biophys. Sin.* 42, 489-495 (2010).
- X-ray absorption spectra for nucleotides (AMP, GMP, and CMP) in liquid water solutions near the nitrogen K-edge, M. Ukai, A. Yokoya, K. Fujii, and Y. Saitoh, *Chem. Phys. Lett.* 495, 90-95 (2010).
- Radiation chemical reactions in water radiolysis with therapeutic heavy ion beams, S. Yamashita, *Rad. Chem.* 90, 11-16 (2010) (in Japanese).
- Selective damage induction of DNA induced by monochromatic soft X-rays, K. Fujii, *Rad. Chem.* 90, 17-22 (2010) (in Japanese).
- Electron paramagnetic resonance study of unpaired electron species in thin films of pyrimidine bases by nitrogen and oxygen K-shell photoabsorption, T. Oka, A. Yokoya, and K. Fujii, *Appl. Phys. Lett.* 98, 103701-1-103701-3 (2011).
- Changes to the chemical structure of isotactic-polypropylene induced by ion-beam

Research Group for Spin-Polarized Positron Beam

Papers

- Spin-polarized positron annihilation measurements on polycrystalline Fe, Co, Ni and Gd based on Doppler broadening of annihilation radiation, A. Kawasuso, M. Maekawa, Y. Fukaya, A. Yabuuchi, and I. Mochizuki, *Phys. Rev. B* 83, 100406(R)-1-100406(R)-4 (2011).
- Defect Structure of MBE-grown GaCrN Diluted Magnetic Semiconductor Film, A. Yabuuchi, M. Maekawa, A. Kawasuso, S. Hasegawa, Yi-Kai Zhou, and H. Asahi, *J. Phys. Conf. Ser.* 262, 012066-1-012066-4 (2011).
- Positron Microbeam Study on Vacancy Generation Caused by Stress Corrosion Crack Propagation in Austenitic Stainless Steels, A. Yabuuchi, M. Maekawa, and A. Kawasuso, *J. Phys. Conf. Ser.* 262, 012067-1-012067-4 (2011).
- Development of spinpolarized positron beam using high energy proton beam, M. Maekawa, A. Kawasuso, Y. Fukaya, and A. Yabuuchi, *J. Phys. Conf. Ser.* 262, 012035-1-012035-4 (2011).
- A study of defects in electron- and ion-irradiated ZrCuAl bulk glassy alloy using positron annihilation techniques, F. Hori, N. Onodera, Y. Fukumoto, A. Ishii, A. Iwase, A. Kawasuso, A. Yabuuchi, M. Maekawa, and Y. Yokoyama, *J. Phys. Conf. Ser.* 262, 012025-1-012025-4 (2011).
- Electron compound nature in a surface atomic layer of a two-dimensional hexagonal lattice, I. Matsuda, F. Nakamura, K. Kubo, T. Hirahara, S. Yamazaki, W. H. Choi, H. W. Yeom, H. Narita, Y. Fukaya, M. Hashimoto, A. Kawasuso, M. Ono, Y. Hasegawa, S. Hasegawa, and K. Kobayashi, *Phys. Rev. B* 82, 165330-1-165330-6 (2010).
- Spin conversion of positronium in $\text{NiO}/\text{Al}_2\text{O}_3$ catalysts observed by coincidence Doppler broadening technique, H.J. Zhang, Z. Q. Chen, S. J. Wang, A. Kawasuso, and N. Morishita, *Phys. Rev. B* 82, 035439-1-035439-10 (2010).
- Free volume in Zr-based bulk glassy alloys studied by positron annihilation techniques, A. Ishii, A. Iwase, Y. Yokoyama, T. J. Konno, A. Kawasuso, A. Yabuuchi, M. Maekawa, and F. Hori, *J. Phys. Conf. Ser.* 225, 012020-1-012020-4 (2010).

Researches conducted under collaborations between ASRC groups appear in each group's publication list. Excluding the overlap, the total number of Papers is 190.

Books & Reviews

- Effects of Organic Acids on Biotransformation of Acinides, T. Ohnuki, N. Kozai, T. Ozaki, F. Sakamoto, Y. Suzuki, T. Nankawa, and T. Yoshida, in Nuclear Energy and the Environment; edited by Wai, C., Mincher B. J., ACS symposium series 1046, 333-348 (2010).
- Mineralization of actinides on the surface of microorganisms and minerals. T. Ohnuki, *Pacificchem 2010*, Honolulu, USA (2010).
- Mineralization of heavy elements by microorganism, K. Tanaka, *2010 Geochemical Society Annual Meeting*, Kumagai, Japan (2010).

Invited Talks

- Mineralization of actinides on the surface of microorganisms and minerals. T. Ohnuki, *Pacificchem 2010*, Honolulu, USA (2010).
- Mineralization of heavy elements by microorganism, K. Tanaka, *2010 Geochemical Society Annual Meeting*, Kumagai, Japan (2010).

Appendix

◆ Pre-Review meeting : The Evaluation Committee of Research Activities for Advanced Science Research

Date: April 22-23, 2010
Committee

Chairperson	Takeshi Egami	UT-ORNL Distinguished Scientist/Professor, Department of Materials Science and Engineering, the University of Tennessee, USA
Committee members	Yasuhiro Ie	Director, the Institute for Solid State Physics, The University of Tokyo
	Sukekatsu Ushioda	President, National Institute for Materials Science
	Shigeo Koyasu	Professor, School of Medicin, Keio University
	Tatsuo Shikama	Head, International Research Center for Nuclear Materials Science, Institute for Materials Research, Tohoku University
	Kohei Tamao	Director, Advanced Science Institute, RIKEN
	Hiroshi Toki	Professor Emeritus, Osaka University
	Hidetoshi Fukuyama	Vice President, Tokyo University of Science
	Albert Fert	Scientific Director, the CNRS/Thales Joint Physics Unit, Professor of Physics, University of Paris-Sud, Orsay, France Nobel Prize Winner in Physics 2007
	Peter Fulde	Director and Scientific Member, Max Planck Institute for the Physics of Complex Systems, Germany Director, Asia-Pacific Center for Theoretical Physics
	Norbert Trautmann	Honorary Professor, the Johannes Gutenberg University of Mainz, German

Pre Review Report : <http://jolissrch-inter.tokai-sc.jaea.go.jp/pdfdata/JAEA-Evaluation-2010-006.pdf> (PDF:2MB)

◆ International Workshop

The 1st International ASRC Workshop on "New approach to the exotic phases of actinides compounds under unconventional experimental conditions"
Date : February 16-18, 2011
Venue : Advanced Science Research Center, Tokai, Japan
Organizers : G. H. Lander (ILL, France) and S. Kambe (JAEA)
URL : <http://asrc.jaea.go.jp/soshiki/gr/kambe-gr/Workshop2011/Main.html>

◆ ASRC Seminar

No	Title	Speaker	Affiliation
386	Microbes and microbial products for nuclear waste remediation	Lynne Macaskie	University of Birmingham
	Bacterial transformations of radionuclides and metals	Joanna Renshaw	
387	Spintronics	Samuel D. Bader	Argonne National Laboratory (Advisor of ASRC)
388	Quantum criticality, and the physics and chemistry of superconductivity	Zachary Fisk	University of California, Irvine Invited Researcher for ASRC (Group Leader)
390	Quantum criticality in Yb-based compounds: thermal transport and Seebeck properties	Koichi Izawa	Tokyo Institute of Technology
391	Spin and charge dynamics in anti-ferromagnetic phase of iron-based superconductors	Takami Tohyama	Yukawa Institute for Theoretical Physics, Kyoto University
		Yasuhide Ikeda	Tokyo Institute of Technology
		Toshiyuki Fujii	Kyoto University
		Akira Kirishima	Tohoku University
		Yoshihiro Kitatsuji	JAEA
		Hironori Sakai	JAEA
392	6th workshop of JAEA actinide network: Actinide solution chemistry and actinide nuclei NMR	Akinobu Dote	High Energy Accelerator Research Organization (KEK)
		Valery Zagrebaev	Flerov Laboratory of Nuclear Reactions
393	A prototype of kaonic nuclei K-pp	Takashi Hotta	Tokyo Metropolitan University
394	Multi-nucleon transfer reactions in low-energy collisions of heavy ions	Robert Eder	Chiba University Karlsruhe Institute of Technology
395	Solid state theory for actinide compounds	Hiroaki Ohnishi	RIKEN
396	K and Φ mesons in nuclear matter	Guang-Yu Guo	Department of Physics, National Taiwan University
397	Variational cluster approximation for transition metal oxides	Tetsuya Takimoto	The University of Tokyo
		Naoto Nagaosa	
398	Anomalous magnetic properties of transition metal chains from first-principles calculations	Hiroaki Ikeda	Kyoto University
		Tetsuya Takimoto	Asia Pacific Center for Theoretical Physics
399	Majorana fermion in topological superconductors	Pham Nam Hai	The University of Tokyo
400	Experimental study of Quark Gluon Plasma at RHIC	Yasuyuki Akiba	RIKEN
401	Unusual electronic phases of Mott insulators with strong spin-orbit coupling	Giniyatulla Khalilullin	Max-Planck-Institute
402	Electromotive force induced by zinc-blende MnAs nanomagnets		