SYMPOSIUM II

Scientific Basis for Nuclear Waste Management XXVI
December 2 - 5, 2002

Chairs
Robert J. Finch  Argonne Natl Laboratory
Daniel B. Bulken  Iowa State Univ, U.S. Nuclear Waste Tech Review Board

Symposium Support
U.S. Dept. of Energy - Argonne National Laboratory

Proceedings to be published in both
book form and online
(see ONLINE PUBLICATIONS at www.mrs.org)
as Volume 757
of the Materials Research Society
Symposium Proceedings Series

*Invited paper

SESSION I: PERFORMANCE ASSESSMENT AND REGULATORY STUDIES
Chair: Daniel B. Bulken
Monday Morning, December 2, 2002
Back Bay A (Sheraton)

8:30 AM  1

9:00 AM  2
GRIMSEL TEST SITE – THE NEXT DECADES.  Strass-Vernwa, Wolfgang Kidmaier, Ian McKinley, NAGRA, Wettingen, SWITZERLAND.

9:15 AM  3
UNCERTAINTY AND SENSITIVITY ANALYSIS ON A SIMULATION OF ROCK / HIGH PH FLUID INTERACTION.  Göran Källvenius, Christian Ekberg, Chalmers University of Technology, Dept of Nuclear Chemistry, Gothenburg, SWEDEN.

9:30 AM  4
GEOCHEMICALLY BASED SOURCE TERM ASSESSMENT FOR THE ASSE SALT MINE? COMPARISON OF MODELLING AND EXPERIMENTAL RESULTS.  Wolfram Schlussler, Volker Metz, Bernhard Kienzler, Peter Vojtěch, Harter, Czech Nucleare
Entsorgung, Forschungszentrum Karlsruhe, Karlsruhe, GERMANY; Herbert Meyer, Forschungszentrum Karlsruhe, Karlsruhe, GERMANY.

9:45 AM  5
ASSESSMENT OF GEOCHEMICAL CONTAMINATION PROPERTIES IN THE NEAR FIELD OF A DEEP UNDERGROUND REPOSITORY.  Delphine Pellegri, Institut de Radioprotection et de Sureté Nucléaire, IRSN/DES/SÉSID, Fontenay-sous-Bois, FRANCE; Laurent De Windt, Jan van der Lee, Ecole des Mines de Paris, EMP/CIG, Fontainebleau, FRANCE.

10:00 AM BREAK

10:15 AM  6

10:30 AM  7
MODELING ELEMENT CONCENTRATIONS IN ASPÁ GROUNDWATERS.  Allan T. Ennen, Dept Nuclear Chemistry, Chalmers Univ. of Technology, Göteborg, SWEDEN.

10:45 AM  8
ANTICIPATED LONG TERM EVOLUTION OF SPENT NUCLEAR FUEL: CONSEQUENCES ON THE RELEASE RATE OF

RADIONUCLIDES IN LONG TERM STORAGE AND GEOLOGICAL DISPOSAL.  Christophe Pommier, Patrick Loven, Pierre-Toussaint, CEA-Saclay, Nuclear Energy Direction, Gif-sur-Yvette, FRANCE; Jean-Paul Piron, CEA Cadarache, Nuclear Energy Direction, St. Paul Lez Durance, FRANCE; Jean-Marie Gras, EDF, R&D Division, Moret sur Loing, FRANCE.

11:00 AM  9

11:15 AM  10
ACCOUNTING FOR CORROSION OF HLW GLASSES BY HUMID AIR IN TSPA.  W.L. Ebert, J.C. Camann, N.L. Dietz, Argonne National Laboratory, Chemical Technology Division, Argonne, IL.

11:30 AM  11
COMPUTER SIMULATIONS OF HYDRATION, ALTERATION, AND RELEASE FROM WASTE GLASSES USING A CELL MODEL.  Fernando C. Perez-Carrión, Hsu Gan, and Ian L. Pogg, Vitreous State Laboratory, The Catholic University of America, Washington, DC.

11:45 AM  12

SESSION II: ARCHAEOLOGY AND WASTE MANAGEMENT
Chair: Denis M. Strachan
Monday Afternoon, December 2, 2002
Back Bay A (Sheraton)

1:30 PM  13

2:00 PM  14
RESULTS FROM U.S. LONG-TERM BURIAL EXPERIMENTS OF SIMULATED NUCLEAR WASTE GLASSES.  George Wicks, Swannanoa River Technology Center, Westinghouse Swannanoa River Co., Aiken, SC.

2:30 PM  15
RESULTS FROM BURIAL EXPERIMENTS WITH SIMULATED MEDIEVAL GLASSES.  H. Roemin, S. Gerlach, P. Motsner, F. Mees, P. Jacobs, D. van Dyke, T. Demoen, Carlo ³; Fraunhofer-Institut für Silikatforschung (ISF), Bruchsal-Branch, GERMANY; University of Ghent, BELGIUM; University of Antwerp, BELGIUM; Polytechnical University of Valencia, SPAIN.

3:00 PM BREAK

3:30 PM  16
THE CONSERVATION OF ANCIENT GLASS.  Alice Bocca Pateras, Agora Excavations, American School of Classical Studies, Athens, GRECE.

4:00 PM  17
CHARACTERIZATION OF 9TH CENTURY BC MANUFACTURED GLASS EXCAVATED FROM HASANLU, NORTHWEST IRAN.  Colleen P. Stapleton, Samuel E. Swanson, University of Georgia, Dept of Geology, Athens, GA.

4:30 PM  18
4200 YEAR OLD GLASS AS A MODEL FOR CORROSION OF NUCLEAR WASTE GLASS.  Pamela B. Vondy, Senior Research Scientist in Glass and Ceramic’s, Smithsonian Center for Materials Research and Education, Solfield, MD.
1B.1 SYNTHESIS OF URAMIUM PHOSPHATE PHASES AND POTENTIAL RETARDATION EFFECTS ON SPENT FUEL RADIONUCLIDES. A.S. Turner and D.J. Wronkiewicz, Department of Geology and Geophysics, University of Missouri-Rolla, Rolla, MO.

1B.2 INCORPORATION OF RADIOACTIVE METALS AND TRACE METALS INTO PHOSPHATE AUTUNITE PHASES: THERMODYNAMIC EVALUATION. Xuanfeng Xu, Department of Earth and Planetary Sciences, The University of New Mexico, Albuquerque, NM; Yifeng Weng, Sundia National Laboratories, Carlsbad, NM.

1B.3 NEPTUNIUM SUBSTITUTION INTO THE STRUCTURE OF ALPHA-UCOs. Robert J. Finch and A.J. Kropp, Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

1B.4 CHARACTERIZATION OF URANIUM SPECIATION IN AN AMORPHOUS METALLIC MATRIX. Gani Carreras, Ken R. Czerwinski, Massachusetts Institute of Technology, Nuclear Engineering Dept, Cambridge, MA; Patrick G. Allen, Lawrence Livermore National Laboratory, Livermore, CA.

1B.5 HOST PHASES FOR ACTINIDE ELEMENTS IN THE METALLIC WASTE FORM. D.E. Johnson, Argonne National Laboratory-West, Idaho Falls, ID.

1B.6 CAESIUM AND NIOBIUM TRANSPORT THROUGH POORLY CEMENTED SANDSTONE FROM KRASNOYARSK-26 (RUSSIAN FEDERATION). BATCH AND COLUMN EXPERIMENTAL STUDIES AND MODELING. Ignasi Casas, Javier Gimenez, Juan Manuel Merino, Emilio Armasu, Joan de Pablo, Dept of Chemical Engineering, UPC, Barcelona, SPAIN; Josep Torras, Miguel Roig, Waste Management Laboratory, CTM-UPC, Barcelona, SPAIN.

1B.7 MIGRATION BEHAVIOR OF IRON ION IN COMPACTED BENTONITE UNDER REDUCING CONDITION BY USING ELECTROOSMOSIS. Kunyu Idenfutz, Sei Ji Yano, Xiaohin Xia, Yoshiro Kikuchi, Yasuhiro Enoki, Tsunami Arima, Kyushu Univ, Dept of Applied Quantum Physics and Nuclear Engineering, Fukuoka, JAPAN.

1B.8 A STUDY ON CHEMICAL FORMS AND MIGRATION BEHAVIOR OF CARBON-14 LACED FROM THE SIMULATED HUMS WASTE IN THE SIMULATED CONDITION. Satoru Kusedo, Hiromi Tanabe, Radioactive Waste Management and Research Center, Tokyo JAPAN; Michitaka Masu, Ryotaro Takahashi, Takayuki Shihono, Shieji Yamasui, Teikoku Corp, Power Systems & Services Company Kansai, JAPAN.

1B.9 CHARACTERIZATION OF α-ISOSACCHARINIC ACID. P. Bøttrup, Viking Albinsson, Christian Ekberg, Stefan Ekberg, Chalmers University of Technology, Dept of Nuclear Chemistry, Göteborg, SWEDEN.

1B.10 MODELLING THE SORPTION OF ACTINIDES ONTO CEMENT: AN APPROACH WITH THE SURFACE CO-PRECIPITATION MODEL. D. Lukovic, V. S. Stefanovsky, S. V. Yudinovska, J. H. M. Jansen, Central Research Institute of Electric Power Industry (CRIEPI), Tokyo, JAPAN.

1B.11 EFFECT OF TEMPERATURE ON FORMATION OF MURATAITE AND MURATAITE-PYROCHLORITE CERAMICS. O.I. Kirjancunya, S.V. Stefanovsky, S.V. Yudinovska, "SIA Radio, Moscow, RUSSIA; IGEM RAS, Moscow, RUSSIA.

1B.12 URANIUM REDUCTION BY SHEWANELLA ONEIDENSIS. Ken Czerwinski, Dept. of Nuclear Engineering, Martin Pola, Varsha Klegac, Dept. of Civil and Environmental Engineering, Lisa Mullen, Dept. of Nuclear Engineering, Chanhassen Pharino, Dept. of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA.

1B.13 INVESTIGATION OF REACTOR GRAPHITE PROCESSING WITH THE CARBON-14 RETENTION. Michael J. Opavsky, Olga K. Kornilova, Vsevolod L. Klimov, George A. Bergman, Ganna Yu. Pavlova, Andrew Yu. Yurchenko; Scientific and Industrial Association "Radon", Moscow, RUSSIA.

1B.14 INVESTIGATION OF SILICA GLASS UNDER GAMMA IRRADIATION. Anna Maria M. Santos, Vilma C. Costa, Center of Nuclear Technology Development-CNTP, Belo Horizonte, BRAZIL.

1B.15 FORMATION FACTOR MEASUREMENTS IN GRANITE IN THE LABORATORY – COMPARISON OF THROUGH DIFFUSION AND ELECTROMIGRATION TECHNIQUES. Martin Lügten, Ines Neeren, Royal Institute of Technology, Inst. of Chemical Engineering and Technology, Stockholm, SWEDEN.


1B.17 DYNAMIC BEHAVIOR OF COLLOIDAL SILICA IN THE PRESENCE OF SOLID PHASE. Taiji Chiba, Yochi Nishi, Osaka University, Tohoku University, Sendai, JAPAN.

1B.18 USE OF SHS ROUTE FOR FABRICATION OF ACTINIDE-DOPED PYROCHLORES. Edward Glogovsky, Alexander Kuprin, Institute of Inorganic Materials, Moscow, RUSSIA; Sergei Yudinov, Institute of Geology of Ore Deposits, Moscow, RUSSIA; Sergei Perevalov, Boris Myasoedov, Institute of Geochemistry, Moscow, RUSSIA.

1B.19 POTENTIAL APPLICATIONS OF NANOSTRUCTURED MATERIALS IN NUCLEAR WASTE MANAGEMENT. Yifeng Weng, Charles Bryan, Sundia National Laboratories, Carlsbad, NM; Xuanfeng Xu, Dept. of Earth and Planetary Sciences, University of New Mexico, Albuquerque, NM; Phil Pohl, and C. Jeffrey Brinker, Sundia National Laboratories, Albuquerque, NM.

1B.20 PHASES FORMATION RATE AT SYNTHESIS OF ACTINIDE WASTE FORMS. N.P. Lavrov, S.V. Yudinov, Institute of Geology of Ore Deposits, Moscow, RUSSIA; S.V. Stefanovsky, SIA "Radon", Moscow, RUSSIA; Y.N. Jiang, S. Chae, Institute of Geoscientific, Daejon, KOREA; R.C. Ewing, University of Michigan, Ann Arbor, MI.

1B.21 LEACHING OF AMERICIUM-241, PLUTONIUM-239 AND OAT MATRIX ELEMENTS FROM PEROVSKITE-BASED CERAMICS. A.V. Odshin, S.V. Chizhikovskaya, N.E. Chernyanskaya, A.O. Merkushkin, I.A. Petukhov, D. Mendeleev University of Chemical Technology, Moscow, RUSSIA; S.V. Stefanovsky, SIA "Radon", Moscow, RUSSIA.

1B.22 GEOMETRIC DURABILITY OF SIMULATED IRON PHOSPHATE NUCLEAR WASTE GLASS. H. Haworth, D.J. Wronkiewicz, and D.E. Day, "Department of Geology and Geophysics and "The Graduate Center for Materials Research, University of Missouri-Rolla, Rolla, MO.

1B.23 MOLECULAR DYNAMICS SIMULATION OF DISPLACEMENT CASCADES IN COMPOUNDS OF PARENT STRUCTURES: UO2, Li2ZrO2, And CeZrTiO2+ J.P. Cowan, B.E. Veeder, CEA, DENG-P, SACLAY, FRANCE; C. Mess, A. Charter, CEA, DENG-SCP, SACLAY, FRANCE; N. Morel and D. Ghebre, CEA, DENG-SESC, Marcoule, FRANCE.

1B.24 CATHODOLUMINESCENCE OF Am3+ IN GARNET, (Y, Gd, ..)3(Al, Ga, ..)5O12 AND ZIRCON, (Zr, Ga, ..)6O12. Maria V. Zamoranskaya, Khliep Rudamin Institute, St. Petersburg, RUSSIA; John M. Hammack, Dept of Earth & Environmental Sciences, The George Washington University, Washington, DC; Boris E.
13.25  

13.26  
IMPACT OF ATMOSPHERIC PRESSURE FLUCTUATIONS ON VADOSE-ZONE CONTAMINANT PLUMES. Wayne Downs, Brigham Young Univ, Dept of Civil Engineering, Chao Oh, INEL, Nuclear Engineering Design.

13.27  

13.28  
OBSERVATIONS ON AQUEOUS COLLOID FORMATION DURING HIGH LEVEL WASTE GLASS CORROSION. J.A. Foster, C.J. Mertz, and J.C. Cummins Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

13.29  
SELECTION OF MATRICES FOR IMMOBILIZATION OF ACTINIDE FRACTION OF HLW. AY. Ozbek, D. Mendeleev University of Chemical Technology, Moscow, RUSSIA; S.V. Stefanovskaya, SIA Rados, Moscow, RUSSIA; S.I. Roveny, P.A. Mayak, Ozersk, Cheboksary reg., RUSSIA.

13.30  
LOW-MELTING SALT MIXTURES CONCENTRATION COORDINATES EVALUATION FOR THE WASTE NUCLEAR FUEL REPROCESSING. Vasily Lutsky, Edward Nasrul, Bayswin Scientific Center, Physical Problems Dept, Ulans-Ude, RUSSIA; Bar Mokhovskov, Alexandre Zaryanov, Bayswin State University, Mathematical Dept, Ulans-Ude, RUSSIA.

13.31  
SIMULATION OF RADIOISOTOPE IN THE NEAR FIELD OF A NUCLEAR REPOSITORY AND THE SPECTROPHOTOMETRIC INVESTIGATION OF THE FORMATION OF RADIOISOTOPE BY-PRODUCTS BY APPLYING HIGH ENERGY BEAM-LINE EXPERIMENTS. Thomas Hartmann, Patricia Payet-Hartmann, Christopher Wettem, Ningping Lu, Doug Ware, Los Alamos National Laboratory, Los Alamos, NM; Sandra Sage, Carlsbad Environmental Monitoring Research Center, Carlsbad, NM; Andrzej Rafalski, Institute of Nuclear Chemistry and Technology, Warsaw, POLAND.

13.32  
AB INITIO STUDIES OF PLUTONIUM WITH RELEVANCE TO NUCLEAR WASTE MANAGEMENT. A.K. Setty, B.R. Cooper, West Virginia Univ, Dept of Physics, Morgantown, WV; D.L. Price (deceased), University of Memphis, Dept of Physics, Memphis, TN.

13.33  
EFFECT OF GAS GENERATION IN MATRICES CONTAINING Ra-226 SOURCES. Michael I. Ojo, Scientific and Industrial Association “Radiol”, Moscow, RUSSIA.

13.34  
INCORPORATION OF CERIUM CHLORIDE IN BIOMIMETIC SILICA. Gustavo de A.M. Saffy, Ana Maria M. dos Santos, Fernando S. Lanneurs, Centro de Desenvolvimento do Tecnologico Nuclear, Belo Horizonte, MG, BRAZIL; Marcelo P. Bemquerer, Marco Antonio R. Pinha, Alexandra Gian, Instituto de Cincios Biologicos, Universidade Federal de Minas Gerais, Belo Horizonte, MG, BRAZIL.

13.35  
THE EFFECT OF UNCERTAINTIES IN STABILITY CONSTANTS ON SPECULATION DIAGRAMS. Arvid Oglegaard-Jensen, Christian Eikberg, Dept. Nuclear Chemistry, Chalmers University of Technology, Göteborg, SWEDEN; Gunther Meinrath, RER Consultants Passau, Passau, GERMANY, Technical University Mining Academy Freiberg, Institute of Geology, Freiberg, GERMANY.

13.36  
DIFFUSION AND MIGRATION OF IONS IN SEDIMENTARY ROCK MATRIX BEHAVIOUR OF CESIUM AND IODINE IN MICROPOROUS OF SANDSTONE. Haruo Sato and Tomosuke Murakoa, Japan Nuclear Cycle Development Institute, Tokai-mura, Naka-gun, Ibaraki-ken, JAPAN.

13.37  
INFLUENCE OF ORGANIC MATTER IN THE PREDICTION OF IODINE MIGRATION IN NATURAL ENVIRONMENT. Pascal Reiller, Florence Campana, Valerie Molin, Christophe Poinssot, CEA Saclay, Nuclear Energy Division, FRANCE.

13.38  

SESSION II: ENGINEERED BARRIERS I — WASTE PACKAGE MATERIALS  
Chair: Roger E. Stoller  
Tuesday Morning, December 3, 2002  
Back Bay A (Sheraton)

NOTE early START

8:00 AM  
I4.1 REVIEWS OF CORROSION MODES FOR ALLOY 22 REGARDING LIFETIME EXPECTANCY OF NUCLEAR WASTE CONTAINERS. Radil B. Rebak, John C. Estill, Lawrence Livermore National Laboratory, Livermore, CA.

8:15 AM  
I4.2 LONG-TERM EXTRAPOLATION OF PASSIVE BEHAVIOR OF ALLOY 22. Osvaldo Penado, Darrell Dunn, Gustavo Cragnolino, and Vijay Jain, Center for Nuclear Waste Regulatory Analyses (CNWRA), San Antonio, TX.

8:30 AM  
I4.3 STABILITY AND AGEING OF CANDIDATE ALLOYS FOR THE YUCCA MOUNTAIN PROJECT — CALPHAD RESULTS. P.E. Turchi, Lawrence Livermore National Laboratory (L-533), Livermore, CA; Larry Kaufman, MIT, Dept. of Mater. Sci. and Eng., Cambridge, MA; Zh-Kui Liu, The Pennsylvania State University, Dept. of Mater. Sci. and Eng., University Park, PA.

8:45 AM  
I4.4 CHARACTERIZATION OF THE CORROSION BEHAVIOR OF ALLOY 22 AFTER FIVE YEARS IMMERSION IN MULTILONIC SOLUTIONS. David W. Fice, John C. Estill, R. Daniel McCreight, Radil B. Rebak, Lawrence Livermore National Laboratory, Livermore, CA.

9:00 AM  
I4.5 CORROSION AND STRESS CORROSION CRACKING OF ALLOY 22 IN LEAD-CONTAINING SOLUTIONS. Y.-M. Pan, D.S. Dunn, L. Yang, and G.A. Cragnolino, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, TX.

9:15 AM  
I4.6 EFFECTS OF FLUORIDE AND OTHER ANIONS ON THE CORROSION OF ALLOY-22. April L. Pulvirent, Aaron Barkat, Karen Needham, Mohammad A. Adel-Hadba, Department of Chemistry, Catholic University, Jeffrey A. Gormen, Charles R. Marks, Dominion Engineering Inc. McLean VA.

9:30 AM  
I4.7 ACCOUNTING FOR METALLIC WASTE FORM DEGRADATION IN TSPA. William L. Eber, Michele A. Lewis, Argonne National Laboratory, Chemical Technology Division, Argonne, Il, Stephen G. Johnson, Tanya L. Barber, Argonne National Laboratory-West, Engineering Technology Division, Idaho Falls, ID.

9:45 AM  
BREAK

10:00 AM  
I4.8 CHARACTERISTICS OF THE PASSIVE FILMS ON ALLOY 22. Christine Orme, Kelly Campos, Alan Sanda, Tingyan Linn, Joseph Farmer, Lawrence Livermore National Laboratory, Livermore, CA.

10:15 AM  
I4.9 CHANGES IN THE CORROSION BEHAVIOR OF ALLOY 22 INFLUENCED BY ITS ENOBLEMENT IN AQUEOUS SOLUTIONS. Tingyan Linn, John C. Estill, Gary A. Host, Ken J. Evans, and Radil B. Rebak, Lawrence Livermore National Laboratory, Livermore, CA.

10:30 AM  
I4.10 THERMOGRAVIMETRIC THIN AQUEOUS FILM CORROSION
STUDIES OF ALLOY C 22, Gregory E. Gdowski, Phillip D. Hailey, Lawrence Livermore National Laboratory, Livermore, CA.

10:45 AM 14.11
ASSESSMENT OF CREVICE CORROSION AND HYDROGEN-INDUCED STRESS CORROSION CRACKS OF Ti-6Al-4V ALLOY’S FOR HIW OVERPACK IN DEEP UNDERGROUND WATER ENVIRONMENTS. Goen Nakayama, Koichi Marukami, Mamoru Akashi, Research Laboratory, Ishikawajima-Harima Heavy Industries Co., Ltd., Yokohama, JAPAN.

11:00 AM 14.12
SYNERGETIC EFFECTS OF FLUORIDE AND CHLORIDE ON CORROSION OF TITANIUM-6. April L. Pulvirenti, Aaron Barkatt, Karen Needham, David S. Wong, Mohammad A. Al-Mahadi, Department of Chemistry, Catholic University, Washington, DC; Jeffrey A. Gorman, Charles R. Marks, Dominion Engineering Inc., McLean, VA.

11:15 AM 14.13
REAL AND RECIPROCAL SPACE IMAGING OF RADIATION EFFECTS IN BCC Fe. Roger E. Sculler, Gene E. Ice, Rao I. Baranbash, Oak Ridge National Laboratory, Oak Ridge, TN.

11:30 AM 14.14
CORROSION BEHAVIOR OF CARBON STEEL MATERIALS UNDER SALT DEPOSITS IN SIMULATED DRY REPOSITORY ENVIRONMENTS. Lien-Sing Yang, Robert T. Polahan, Loren B. Browning, Darrell S. Thamm, Southwest Research Institute, Center for Nuclear Waste Regulatory Analyses, San Antonio, TX.

11:45 AM 14.15

SESSION 15: GLASS WASTE FORMS
Chair: William L. Ebert
Tuesday Afternoon, December 3, 2002
Back Bay A (Sheraton)

1:30 PM 15.1
RESULTS OF VERTICAL SCANNING INTERFEROMETER (VSI) OF DISSOLVED BOROSILICATE GLASS: EVIDENCE FOR VARIABLE SURFACE FEATURES AND GLOBAL SURFACE RETREAT. Jonathan Icenhour, B. Peter McGrail, Ela A. Rodriguez, Jackie L. Steele, and Steven S. Braun, Pacific Northwest National Laboratory, Applied Geology and Geochemistry, Richland, WA; Andreas Lutge, Midamba S. Beig, and Rolf S. Arvidsson, Rice University, Geology and Geophysics, Houston, TX.

1:45 PM 15.2
ELECTRON MICROSCOPY STUDY OF REACTION SINTERED HIW GLASS. Weling Gong and Werner Lutz, Vitreous State Laboratory, The Catholic University of America, Washington, DC.

2:00 PM 15.3
ANALYTICAL ELECTRON MICROSCOPY STUDY OF AN IRON-PHOSPHATE GLASS WASTE FORM. K. Sun", L.M. Wang", J.F. Mansfield", R. C. Diving"; Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI; Electron Microscope Analysis Laboratory, University of Michigan, Ann Arbor, MI.

2:15 PM 15.4
MOLYBDENUM IN NUCLEAR WASTE GLASSES – INCORPORATION AND REDOX STATE. R.J. Short and R.J. Hand, Department of Engineering Materials, The University of Sheffield, Sheffield, UNITED KINGDOM.

2:30 PM 15.5
INCORPORATION OF SULFATE INTO ALKALI-ALUMINUM-BOROSILICATE GLASSES. Pavel Hrma, Joel S. Richlo, John D. Vienna, Pacific Northwest National Laboratory, Richland, WA.

2:45 PM 15.6
AFLUATION OF Si3N4/Al GLASS IN WATER AT 90°C: EXPERIMENTS AND THERMODYNAMIC MODELLING. Isabelle Manier and Jean-Louis Croixier, EOST-Centre de Geochimie de la Surface, UMR 7517, Strasbourg, FRANCE.

3:00 PM BREAK

3:15 PM 15.7
EFFECTS OF IRON AND PH ON GLASS DISSOLUTION RATE. Seung-Young Jeong and William L. Ebert, Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

3:30 PM 15.8
FITTING ELEMENT PROFILES FOR PREDICTING GLASS DISSIPATION RATES IN SYNTHETIC INTERSTITIAL CLAY WATER. Marc Andert, Kruel Lemmens, Pierre Van Bogaert, SCK-CEN, Mol, BELGIUM.

3:45 PM 15.9
SONGS GLASS DISSOLUTION KINETICS AT HIGH REACTION PROGRESS: EXPERIMENTAL EVIDENCE OF THE RESIDUAL RATE. Stéphane Gin, Pierre Frazier, Commissariat à l'Énergie Atomique, CEA Valduc DIEC/ESC, Bagnols sur Ceze, FRANCE.

4:00 PM 15.10

4:15 PM 15.11
FUSION PRODUCT IMMOBILISATION IN SECONDARY PHASES FORMED DURING MAGNOX WASTE GLASS DISSOLUTION AT 60°C: EXPERIMENTAL RESULTS AND MODELLING. Neil K. Abbasian, Charlie R. Scales, BNFL, Research & Technology, Sellafield, Cumbria, UNITED KINGDOM.

4:30 PM 15.12
EXTENSION OF THE MODIFIED ASSOCIATE SPECIES THERMOCHEMICAL MODEL FOR HIGH-LEVEL NUCLEAR WASTE GLASS. Theodore M. Besmann, Oak Ridge National Laboratory, Oak Ridge, TN; Karl E. Speir, The Pennsylvania State University, University Park, PA; John D. Vienna, Pacific Northwest National Laboratory, Richland, WA.

4:45 PM 15.13
COLD CRUSHABLE VITRIFICATION OF NPP OPERATIONAL WASTE. Vedroor A. Lahnow, Michael I. Ojora, Sergey V. Stefanovskiy, Scientific and Industrial Association “Radon”, Moscow, RUSSIA; Rudolf Burdl, International Atomic Energy Agency, Vienna, AUSTRIA.

SESSION 16: CERAMIC WASTE FORMS AND RADIATION EFFECTS
Chair: David J. Wroblewicz and Rerto Giese
Wednesday Morning, December 4, 2002
Back Bay A (Sheraton)

NOTE EARLY START

8:00 AM 16.1

8:15 AM 16.2
U- AND Hf-BEARING PYROCHLORITE AND ZIRCONOLITE AND THEIR LEACHED LAYERS FORMED IN ACIDIC SOLUTION: TEM INVESTIGATION. Huiling Xu, Department of Earth and Planetary Sciences, The University of New Mexico, Albuquerque, NM; Yi-feng Wang, Sandia National Laboratories, Livermore, PM; Pi-hong Zhao, and Bill Boucier, Lawrence Livermore National Laboratory, Geoscience and Environmental Technologies, LLNL, Livermore, CA.

8:30 AM 16.3
STRUCTURAL CHARACTERIZATION OF Na2SUBSTITUTED ZIRCONOLITE POLYCRISTALLINE MATERIALS. Pascal Loiseau, Daniel Cauraun, Noël Ballet, Laboratoire de Chimie Appliquée de l’Uranium Solide (ENSCP), Paris, FRANCE; Catherine Fillot, CEA-Valduc, DEN/DIEC/SCDV/LEBM, Bagnols-sur-Ceze, FRANCE.
SESSION III: CHEMISTRY I — SPECIATION, COLOIDS AND ORGANICS
Chair: Richard Aguilar and Ken R. Czarnecki
Wednesday Afternoon, December 4, 2002
Back Bay A (Sheraton)

1:30 PM HI7.1
NO SPECIATION IN HUMIC ACID-RICH CLAY WATER UPON INTERACTION WITH RADIOACTIVE WASTE GLASS SAMPLES.
Vera Pijpers, SCK/CEN, Waste and Disposal Department, Mol, BELGIUM.

2:00 PM HI7.2
ROLE OF NATURAL OCCURRING ORGANIC MATTER ON THORIUM TRANSPORT IN A WETLAND. Daniel Kaplan, Anna Knox, Westinghouse Savannah River Company, Aiken, SC.

2:15 PM HI7.3
STUDY OF COMPLEXATION OF IRON(III) WITH HUMIC ACID AND POLYACRYLIC ACID BY USING ION EXCHANGE METHOD. Badi Setawarim, Koushi Takanaka, Yuichi Niibori, Osamu Tochiyama, Department of Quantum Science and Energy Engineering, Graduate School of Engineering, Tohoku University, Sendai, JAPAN.

2:30 PM HI7.4
NATURAL GROUND WATER COLLOIDS FROM THE USGS J-38 WELL IN NYE COUNTY, NV. A STUDY USING SAXS AND TEM. Jeffrey A. Fortner*, Carol J. Mertz*, and Peter R. Jenius. 5
5Chemical Technology Division, Argonne National Laboratory;
6University of Illinois, Urbana-Champaign, Urbana, IL.

2:45 PM HI7.5
UNDERSTANDING THE BEHAVIOR AND STABILITY OF SOME URANIUM MINERAL COLLOIDS. Carol J. Mertz and Jeffrey A. Fortner, Argonne National Laboratory, Chemical Technology Division, Argonne, IL.

3:00 PM BREAK

3:15 PM HI8.1

3:30 PM HI8.2
MOBILIZATION/RETENTION OF RADIONUCLIDES DURING CONDENSATION OF HIGH BURNUP SPENT FUEL AND NEAR FIELD MATERIALS IN SALT BRINES. Andreas Lodia, Bernhard Kiemler, Horst Geckeis, Forschungszentrum Karlsruhe, Institut für Nukleare Entsorgung, Karlsruhe, GERMANY.

3:45 PM HI8.3
THE HYDRATION OF MAGNESIUM OXIDE IN THE WASTE ISOLATION PILOT PLANT. Anna C. Snider, Sandia National Laboratories, Carlsbad, NM.

4:00 PM HI8.4
SOLUTION CHEMISTRY AND PLUTONIUM-239 BEHAVIOR IN SYNTHETIC BRINES AFTER EXPOSURE TO MAGNESIUM OXIDE BACKFILL. Ningbing Lu, Thomas Hartmann, James Conca, Patricia Paxit-Hartmann, Gary Parker, Los Alamos National Laboratory, Los Alamos, NM; Jeffrey Terry, Illinois Institute of Technology, IL.

4:15 PM HI8.5
KINETICS OF ANION ABSORPTION BY MgAl LAYERED DOUBLE HYDROXIDES. Charles Bryan, Yifeng Wang, Sandia National Labs, Carlsbad, NM; Hua Feng Xu, Univ of New Mexico, Dept of Earth and Planetary Sciences, Albuquerque, NM; Paul Brazerman, Univ of North Texas, Denton, TX.

4:30 PM HI8.6
MAINTAINING CHEMICALLY REDUCING WASTE PACKAGE CONDITIONS IN AN OXIDIZING GEOCHEMICAL...
SESSION II: SPENT FUEL
Chair: Jonathan P. Ijehower and Andreas Leith
Thursday Morning, December 5, 2002
Back Bay A (Sheraton)

NOTE EARLY START

8:15 AM 1B.1
SURFACE PRECIPITATION DURING THE LEACHING OF SPENT FUEL. Daqing Cui, Jerome Devoy, Studsvik Nuclear AB, Nykøbing, SWEDEN; Kustrict Spahiu, SKB, Stockholm, SWEDEN.

8:30 AM 1B.2
Dissolution Behaviour of Plutonium from Unirradiated MOX Fuel. J. Cabas, CIEMAT, Madrid, SPAIN; V.V. Bondarenko, T. Gaud, European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, GERMANY.

8:45 AM 1B.3
Dissolution Behavior and Fission Product Release from Irradiated Thorium-Uranium Fuel in Groundwater at 90°C. J.L. Jerden Jr. and J.C. Cummins, Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

9:00 AM 1B.4
The Behavior of Light Water Reactor Fuel. After the Cladding is Breached under Unstressed Test Conditions. J. Cummins, J. Forneriz and R. Finch, Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

9:15 AM 1B.5
RadioNuclide Release Rates from Spent Fuel Rod Segment. Margaret Goldberg and Yilun Tsai, Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

9:30 AM 1B.6
A Comparison and Abstraction of the Commercial Spent Fuel Dissolution Experiments in the U.S. Eric Siegmund, Franklin & Dukes, Las Vegas, NV.

9:45 AM 1B.7
Determination of the Structure of the Material that Makes Spent Fuel Float. Bruce McNamara, Pacific Northwest Laboratory, Radiochemical Processing Laboratory (RPL), Richland, WA; Brady Hanson, Pacific Northwest Laboratory, Radiochemical Processing Laboratory (RPL), Richland, WA; Edgar Buck, Pacific Northwest Laboratory, Radiochemical Processing Laboratory (RPL), Richland, WA; Steve Marschman, Pacific Northwest Laboratory, Radiochemical Processing Laboratory (RPL), Richland, WA.

10:00 AM BREAK

10:15 AM 1B.8

10:30 AM 1B.9

10:45 AM 1B.10
Building Confidence in RadioLytic Modelling: Application to Spent Fuel Dissolution Experiments. Juan Merino, Esther Cera, Jordi Bruno, Environ, Cerdanyola, SPAIN.

11:00 AM 1B.11
Redox Reactions of Iron and Uranium Dioxide in Simulated Cement Fored Water Under Anoxic Conditions. Daqing Cui, Studsvik Nuclear AB, Nykøbing, SWEDEN; Karriot Spahiu, Stockholm, SKB, SWEDEN; Paul Versin, NAGRA, Wettingen, SWITZERLAND.

SESSION III: CHEMISTRY II — SORPTION, MIGRATION AND PROCESSING
Chair: Carol J. Mertz and Daqing Cui
Thursday Afternoon, December 5, 2002
Back Bay A (Sheraton)

1:30 PM III.1
Pu (IV) Sorption on TIO₂. Martin Okasa, Anna-Maria Jakobsson, Yngve Albinsson, Chalmers University of Technology, Dept. of Nuclear Chemistry, Gothenburg, SWEDEN.

1:45 PM III.1.2
Actinide Migration in Granite Fractures: Comparison between In-situ and Laboratory Results. Bernhard Kienzler, Jürgen Römer, Peter Vejmelka, Instut für Nukleare Entsorgung, Forschungszentrum Karlsruhe, Karlsruhe, GERMANY; Mats Jansson, Tryggve E. Erikson, Dept. of Nuclear Chemistry, Royal Institute of Technology, Stockholm, SWEDEN; Karlroht Spahiu, Svenks Kiemframbkleantering AB (SKB), Stockholm, SWEDEN.

2:00 PM III.1.3

2:15 PM III.1.4
Reactions Controlling Sp Groundwater Chemistry. Allin T. Everest, Dept Nuclear Chemistry, Chalmers Univ of Technology, Göteborg, SWEDEN.

2:30 PM III.1.5
Modelling of Biochemically Mediated Oxygen Depletion Processes in Rocks. Magnus Sidhorn, Ivans Nerepenciks, Royal Institute of Technology, Dept of Chemical Engineering, Stockholm, SWEDEN.

2:45 PM III.1.6

3:00 PM BREAK
3:30 P.M. III.1.8
OPTIMIZED AND ALTERNATIVE SORBENTS FOR Sr²⁺ AND ACTINIDE REMOVAL FROM SRS ALKALINE WASTE SOLUTIONS. May Nyman, Sandia National Laboratories, Albuquerque, NM; David T. Hobbs, Westinghouse Savannah River Company, Aiken, SC.

3:45 P.M. III.1.9

4:00 P.M. III.1.10
SYNTHESIS AND EVALUATION OF NEPTUNIUM- AND PLUTONIUM-IMPRINTED RESINS. K.L. Noyes⁵, W.H. Runde⁵, and K.R. Czerwinski⁵; "Department of Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, MA: "Isotope and Nuclear Chemistry, Chemistry Division, Los Alamos National Laboratory, Los Alamos, NM.

4:15 P.M. III.1.11
PRECIPITATION OF TRANSURANICS IN TANK WASTE WITH PERMANGANATE: AN ANALYTICAL ELECTRON MICROSCOPY STUDY. Edgar Back, Richard Halen, Battelle, Richland, WA.