

Migration 2009



Kennewick, Washington, USA

September 20 - 25, 2009

*12th International Conference on the Chemistry and Migration
Behaviour of Actinides and Fission Products in the Geosphere*



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Conference Address

Migration '09
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Conference Website: <http://www.pnl.gov/migration09/>

Supported by

Migration '09 is being organized by Pacific Northwest National Laboratory, U.S. Department of Energy's EMSL (Environmental Molecular Sciences Laboratory), and Washington State University. Each of these entities is known for their expertise and capabilities related to radionuclide fate and transport.



Migration is also supported by the:

European Commission, Bundesministerium für Wirtschaft und Technologie (BMWi), Germany, Forschungszentrum Karlsruhe, Germany, and Energiewerke Baden-Württemberg (EnBW), Germany



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Background

The MIGRATION conferences provide an international forum for the timely exchange of scientific information on chemical processes controlling the migration behaviour of actinides and fission products in natural aquifer systems. Experimental investigations and predictive modelling of these processes are the main topics of the conferences. The information generated from the MIGRATION conferences is the basis for the mechanistic understanding of the migration behaviour of long-lived radionuclides in the geosphere, which is essential for the long-term performance assessment of nuclear waste disposal.

The first MIGRATION conference was held in 1987 in Munich, Germany. It was followed by MIGRATION '89 in Monterey, California, USA; MIGRATION '91 in Jerez de la Frontera, Spain; MIGRATION '93 in Charleston, South Carolina, USA; MIGRATION '95 in Saint-Malo, France; MIGRATION '97 in Sendai, Japan, MIGRATION '99 at Lake Tahoe, Nevada, USA, MIGRATION '01 in Bregenz, Austria, MIGRATION '03 in Gyeongju, Korea, MIGRATION '05 in Avignon, France, and MIGRATION '07 again in Munich.

Conference papers that were peer-reviewed and accepted for publication have been appeared in special issues of *Radiochimica Acta* 44/45 (1988), 52/53 (1991), 58/59 (1992), 66/67 (1994), 74 (1996), 82 (1998), 88 (no. 9/10) (2000), 90 (2002), 92 (2004), 94 (2006), in the *Journal of Contaminant Hydrology* 13 (no. 1/4) (1993), 21 (no. 1/4) (1996), 26 (no. 1/4) (1997), 35 (no. 1/3) (1998), 47 (no. 2/4) (2001), 61 (no. 1/4) (2003) and in *Physics and Chemistry of the Earth* 31 (2006). Proceedings of the last conference are printed in the journals *Radiochimica Acta* 96 (2008) and *Physics and Chemistry of the Earth* 33 (2008).

Scope

The MIGRATION conferences focus on recent developments in the fundamental chemistry of actinides, fission and activation products in natural aquifer systems, their interactions and migration in the geosphere, and the processes involved in modelling their geochemical behaviour.

The sessions in MIGRATION'09 cover the following areas:

A Aquatic chemistry of actinides and fission products

- 1) Solubility and dissolution
- 2) Solid solution and secondary phase formation
- 3) Complexation with inorganic and organic ligands
- 4) Redox reactions and radiolysis effects
- 5) Solid-water interface reactions
- 6) Colloid formation
- 7) Experimental methods

B Migration behaviour of radionuclides

- 1) Sorption/desorption phenomena in dynamic systems
- 2) Diffusion and other migration processes
- 3) Colloid migration
- 4) Effects of biological and organic materials
- 5) Field and large scale experiments
- 6) Natural analogues

C Geochemical and transport modelling

- 1) Data selection and evaluation
- 2) Coupling chemistry and transport
- 3) Development and application of models
- 4) Model validation

Hanford Special Session

Programme

SUNDAY (20.09.09)

12:00noon Registration Opens

6:00 PM Opening Session And Reception

Welcoming Addresses

6:45 PM Mike Kluse – *Pacific Northwest National Laboratory,
Laboratory Director*

John Miller – *U.S. Department Of Energy,
Basic Energy Sciences*

Todd Anderson – *U.S. Department Of Energy,
Basic Energy Research*

Invited Presentation:

7:15 PM Roy Gephart – *Pacific Northwest National Laboratory
"A Short History of Waste Generation, Storage, and Release
at the Hanford Site"*

Monday (21. September)

8:15 am CONFERENCE ANNOUNCEMENTS

Session 1 A5: Solid-Water Interface Reactions

Chair: J. Zachara, Th. Fanghänel

8:30 am IMAGING STRUCTURES AND PROCESSES AT MINERAL-WATER INTERFACES WITH X-RAYS **A5-1**
P. Fenter (INVITED) (USA)

9:15 am TOWARDS MODELING REDOX PROCESSES OF ACTINIDE SPECIES AT MINERAL INTERFACES **A5-2**
W.A. de Jong, P. Yang, E.J. Bylaska (USA)

9:40 am A COMPARATIVE BATCH AND TRLFS STUDY ON THE SORPTION OF Eu(III) AND Cm(III) ON SYNTHETIC AND NATURAL KAOLINITE **A5-3**
N. Huittinen, Th. Rabung, P. Andrieux, J. Lehto, H. Geckeis (Finland, Germany)

10:05 am PLUTONIUM(VI) ADSORPTION ONTO GOETHITE AND MANGANESE OXIDE **A5-4**
H. Boukhalfa, S.A. Stout, S.D. Reilly, J. Bargar, P.C. Lichtner, M.P. Neu, S. Conradson (USA)

10:30 am BREAK

Session 2 B4: Effects of Biological and Organic Materials

Chair: H. Nitsche, T. Ohnuki

10:50 am GEOCHEMICAL FACTORS CONTROLLING THE EQUILIBRIUM SOLUBILITY AND DISSOLUTION RATE OF BIOGENIC URANINITE **B4-1**
D.E. Giammar, K.-U. Ulrich, E.S. Ilton, H. Veeramani, J.O. Sharp, R. Bernier-Latmani, E.J. Schofield, J.R. Bargar (USA)

MONDAY

- 11:15 am Se BEHAVIOUR IN THE BOOM CLAY SYSTEM: SPECTROSCOPIC EVIDENCE **B4-2**
E. Breynaert, D. Dom, J. Vancluysen, A. Maes (Belgium)
- 11:40 am EXPLORING TERNARY INTERACTIONS BETWEEN RADIONUCLIDES, ORGANIC COMPLEXING AGENTS AND NATURAL SAND **B4-3**
E. Reinoso-Maset, P.J. Worsfold, M.J. Keith-Roach (UK)
- 12:05 pm BIOSTABILIZATION OF URANIUM IN AN ALLUVIAL AQUIFER: OVERVIEW OF RESULTS FROM FIELD-SCALE ELECTRON DONOR AMENDMENTS **B4-4**
P. Long, J. Banfield, D.L. Chandler, J. Davis, R. Dayvault, B. Hettich, S. Hubbard, P. Jaffe, L. Kerkhof, R. Kukkadapu, M. Lipton, D. Lovley, L. N'Guessan, A. Peacock, F. Spane, N. VerBerkmoes, K. Williams, S. Yabusaki, the Rifle IFRC Science Team (USA)
- 12:30 pm BREAK

Session 3 C: Geochemical and Transport Modelling

Chair: J. Hadermann, J. Samper

- 2:00 pm THE GOOD, THE BAD AND THE UGLY OF REACTIVE TRANSPORT MODELS AND APPLICATIONS TO REAL WORLD PROBLEMS **C-1**
J. Van der Lee (INVITED) (France)
- 2:45 pm STOCHASTIC SIMULATION OF URANIUM MIGRATION AT THE HANFORD 300 AREA **C-2**
G.E. Hammond, P.C. Lichtner, M.L. Rockhold (USA)
- 3:10 pm TESTING THE K_d-APPROCH WITH A MULTI-COMPONENT GEOCHEMICAL REACTIVE TRANSPORT MODEL FOR A HLW REPOSITORY IN GRANITE FOR Ni AND Cs **C-3**
J. Samper, C. Lu, J.L. Cormenzana, H. Ma, L. Montenegro, M.A. Cuñado (Spain)

3:35 pm REACTIVE TRANSPORT MODELING OF IN SITU URANIUM BIOSTIMULATION EXPERIMENTS AT THE RIFLE IFRC **C-4**
S. Yabusaki, Y. Fang, J. Davis, C. Steefel, P. Long (USA)

4:00 pm BREAK

Session 4 **A4: Redox Reactions and Radiolysis Effects**

Chair: K. Spahiu, B. Grambow

4:20 pm RETENTION AND REDOX BEHAVIOUR OF URANIUM(VI) BY SIDERITE (FeCO_3) **A4-1**
A. Ithurbide, S. Peulon, F. Miserque, C. Beaucaire, A. Chaussé (France)

4:45 pm ON THE ROLE OF U(V) IN THE HETEROGENEOUS REDUCTION OF U(VI) TO U(IV) **A4-2**
E.S. Ilton, J. Bargar, A.R. Felmy (USA)

5:10 pm REDUCTION OF Np(V) IN NON-COMPLEXING AQUEOUS SYSTEMS (pH 5 - 10): GENERAL ASPECTS ON THERMODYNAMICS, KINETICS AND MECHANISM **A4-3**
V. Neck, M. Altmaier, D. Fellhauer, J. Runke, Th. Fanghänel (Germany)

5:35 pm RATE AND MECHANISMS OF ELECTRON TRANSFER REACTIONS AT THE IRON OXIDE-WATER INTERFACE **A4-4**
S. Kerisit, K.M. Rosso (USA)

6:00 pm END

Session 5 Poster Session I (7:00 – 10:00 pm)

Chair: *H. Geckeis, S. Huclier,*

PA1 Solubility and Dissolution

PA1-1 CONSOLIDATION OF THE HYDRATION MECHANISM OF THE SON68 REFERENCE NUCLEAR WASTE GLASS

J. Neeway, A. Abdelouas, B. Grambow (France)

PA1-2 A DOUBLE APPROACH FOR THE SOLUBILITY STUDY OF MONOCLINIC AND TETRAGONAL ZrO₂ ZIRCONIA: DETAILED CHARACTERISATION OF THE SOLID AND THE SOLUTION

T. Suzuki, P. Deniard, S. Jobic, B. Grambow (France)

PA1-3 SOLUBILITY OF TETRAVALENT NEPTUNIUM WITH Ca AND Si IN THE HIGH PH REGION

K. Fujiwara, Y. Kohara, M. Okazaki, Y. Suzuki (Japan)

PA1-4 EFFECT OF Fe(III) PRECIPITATES ON DISSOLUTION OF SPENT FUEL

D. Cui, J. Low (Sweden)

PA1-5 DETERMINATION OF THE SOLUBILITY OF TRIURANYL DIPHOSPHATE TETRAHYDRATE (TDT)

C.R. Armstrong, S.B. Clark (USA)

PA1-6 THE ROLE OF URANOPHANE, Ca(UO₂)₂(SiO₃OH)₂(H₂O)₅, DISSOLUTION KINETICS IN SUSTAINING A PERSISTENT SOURCE OF URANIUM WITHIN THE HANFORD 300 AREA

D.M. Wellman, E.M. Pierce, D.H. Bacon, E.A. Cordova (USA)

PA1-7 DISSOLUTION BEHAVIOR OF ACTINIDE CONTAINING INERT MATRIX FUEL

Kiel Holliday, Ken Czerwinski (USA)

PA3 Complexation with Inorganic and Organic Ligands

PA3-1 COMPLEX FORMATION OF SeO₄²⁻ AND SO₄²⁻ WITH Ca²⁺ STUDIED BY CAPILLARY ELECTROPHORESIS: IONIC STRENGTH AND TEMPERATURE EFFECTS

V. Philippini, J. Aupiais, T. Vercouter, C. Moulin (France)

- PA3-2** SIT AND PITZER MODEL FOR THE UO_2^{2+} ION IN NaCl , MgCl_2 AND CaCl_2 SOLUTIONS APPLIED TO TRACE ACTIVITY COEFFICIENTS DETERMINED BY SOLVENT EXTRACTION WITH TBP
M. Altmaier, V. Neck, J. Lützenkirchen (Germany)
- PA3-3** TIME RESOLVED FLUORESCENCE SPECTROSCOPY OF Eu(III) COMPLEXES WITH BENZOIC ACID DERIVATIVES AT DIFFERENT TEMPERATURES
A. Barkleit, M. Acker, S. Taut, G. Bernhard (Germany)
- PA3-4** INTERACTION OF URANIUM(VI) AND EUROPIUM(III) WITH ALPHA-AMYLASE
A. Barkleit, P. Jähnigen, C. Hennig, A. Rossberg (Germany)
- PA3-5** SOLUBILITY OF TETRAVALENT ACTINIDES IN ALKALINE CaCl_2 SOLUTIONS AND FORMATION OF $\text{Ca}_4[\text{AN}(\text{OH})_8]^{4+}$ COMPLEXES: Np(IV) AND Pu(IV) UNDER REDUCING CONDITIONS
D. Fellhauer, V. Neck, M. Altmaier, J. Lützenkirchen, Th. Fanghänel (Germany)
- PA3-6** FLAVONOIDS: NATURAL PHENOLIC COMPLEXING AGENTS TOWARDS URANIUM
G. Geipel, K. Viehweger, G. Bernhard (Germany)
- PA3-7** CE-DAD-ICP-MS FOR DETERMINATION OF COMPLEX FORMATION CONSTANTS FOR THE COMPLEXATION OF LANTHANIDES AND ACTINIDES WITH HUMIC SUBSTANCES
E. Gromm, R.A. Buda, J.V. Kratz (Germany)
- PA3-8** COMBINED UV-VIS AND EXAFS STUDY ON THE COMPLEX FORMATION OF URANIUM(VI) WITH SEVERAL CARBOXYLIC ACIDS
C. Lucks, A. Rossberg, A.C. Scheinost (Germany)
- PA3-9** UV-VIS SPECTROSCOPY OF Eu(III) AND Am(III) COMPLEXATION WITH SMALL ORGANIC ACIDS AT LOW CONCENTRATIONS AND VARIABLE TEMPERATURES
M. Müller, M. Acker, A. Barkleit, S. Taut, G. Bernhard (Germany)
- PA3-10** COMPLEXATION OF LOW-VALENT ACTINIDES (URANIUM(IV) , PLUTONIUM(III)) BY ORGANIC MODEL LIGANDS AND HUMIC ACID IN AQUEOUS SOLUTION
K. Schmeide, S. Sachs, G. Bernhard (Germany)

MONDAY

- PA3-11** COMPLEX FORMATION AND MOLECULAR STRUCTURE OF Np(VI) AND Np(V) ACETATES
K. Takao, S. Takao, A.C. Scheinost, G. Bernhard, C. Hennig (Germany)
- PA3-12** AN ACTINIDE(III) ION AS PROBES: ON THEIR OPTICAL PROPERTIES IN POLY- AND HETERO-NUCLEAR COMPLEXE
N. Aoyagi, H. Naganawa, T. Kimura (Japan)
- PA3-13** THERMODYNAMIC STUDY ON THE U(VI) COMPLEXATION WITH DI-CARBOXYLIC ACIDS BY MICRO CALORIMETRY
A. Kirishima, T. Koizumi, N. Sato (Japan)
- PA3-14** SOLUBILITY-LIMITING SOLID PHASE IN Zr(IV)-OH-DICARBOXYLATES TERNARY AQUEOUS SYSTEM
T. Kobayashi, T. Sasaki, I. Takagi, H. Moriyama (Japan)
- PA3-15** HYDROLYSIS OF TETRAVALENT METAL IONS IN PRESENCE OF ORGANIC MATTER
T. Sasaki, S. Aoyama, T. Kobayashi, I. Takagi, H. Moriyama (Japan)
- PA3-16** EXTRACTION OF URANIUM, Pd(II), Re(II) FROM NITRIC ACID SOLUTIONS USING PYRROLIDONE DERIVATIVES
Y. Takahashi, M. Nogami, H. Hotokezaka, Y. Ikeda (Japan)
- PA3-17** Eu(III) BINDING ABILITIES OF DISSOLVED HUMIC SUBSTANCES ISOLATED FROM DEEP GROUNDWATER IN HORONOBE AREA, HOKKAIDO, JAPAN
M. Terashima, Y. Seida, S. Nagao, T. Iwatsuki, K. Iijima, H. Yoshikawa, M. Yui (Japan)
- PA3-18** SIZE DEPENDENCE OF METAL BINDING TO HUMIC ACID STUDIED BY FIELD-FLOW FRACTIONATION-ICP-MS
M. Yamamoto, T. Saito, S. Nagasaki, S. Tanaka (Japan)
- PA3-19** THE FORMATION CONSTANTS OF Pu (VI)-OH COMPLEXES IN AN OXIDATION CONDITION
H.-R. Cho, E.C. Jung, K.K. Park, K. Song, K.Y. Jee (Korea)
- PA3-20** URANIUM SPECIATION IN SULFURIC ACID SOLUTIONS AFTER DUMP LEACHING OF URANIUM ORES
St.N. Kalmykov, V.G. Petrov, A.Yu. Romanchuk, D.N. Batuk, N.S. Scherbina, V.V. Fadeev, E.A. Shirshin (Russia)

- PA3-21** STRUCTURE AND DYNAMICS OF BINARY AND TERNARY LANTHANIDE(III) AND ACTINIDE(III) - TRIS[4,4,4-TRIFLUORO-1-(2-THIENYL)-1,3-BUTANEDIONE] (TTA) - TRIBUTYLPHOSPHATE (TBP) COMPLEXES
Z. Szabó, V. Vallet, A. Fischer, I. Grenthe (Sweden, France)
- PA3-22** EFFECT OF 'AS-DISPOSED' ANTHROPOGENIC ORGANIC COMPLEXANTS ON THE SOLUBILITY OF Ni, Th, U(IV), AND U(VI)
M. Felipe-Sotelo, T. Lewis, P. Warwick, N.D.M. Evans (UK)
- PA3-23** COMPLEXATION OF Nd(III) WITH TETRABORATE ION AND ITS EFFECT ON ACTINIDE (III) SOLUBILITY IN WIPP BRINE
M. Borkowski, M.K. Richmann, D.T. Reed (USA)
- PA3-24** CORRELATIONS OF THERMODYNAMIC PARAMETERS FOR f-ELEMENTS WITH ORGANIC ACIDS: IMPLICATIONS ON COORDINATION GEOMETRY
A. Paulenova, S.B. Clark (USA)
- PA3-25** NEW NANO-SCALE URANYL PEROXIDE CLUSTER TOPOLOGIES
G.E. Sigmon, P.C. Burns (USA)
- PA3-26** ACTINIDE HALIDE SOLUTION COMPLEXES: THEIR STRUCTURES AND ASSOCIATED STABILITY CONSTANTS
L. Soderholm, S. Skanthakumar, R.E. Wilson (USA)
- PA3-27** DETERMINATION OF TECHNETIUM(IV) ACETATE STABILITY CONSTANTS
M.A. Boggs, N.A. Wall (USA)
- PA3-28** URANYL PHOTOCHEMISTRY: DECARBOXYLATION OF GLUCONIC ACID
Z. Zhang, G. Helms, S.B. Clark, K.L. Nash (USA)
- PA3-29** COMPARISON OF THE SPECTROSCOPIC CHARACTERISTICS OF URANIUM SPECIES WHEN U(III) IN A LiCl-KCl MOLTEN SALT WAS REACHED OUT AND CAME INTO WATER AND AN IONIC LIQUID
H.-J. Im, T.-J. Kim, K. Song, W.-H. Kim (Korea)
- PA3-30** COMPLEXATION THERMODYNAMICS AND THE STRUCTURE OF THE BINARY COMPLEXES OF TRIVALENT ACTINIDE AND LANTHANIDE CATIONS BY DTPA, MS-325 AND HMDTPA AND THEIR TERNARY COMPLEXES WITH OXALIC ACID
P. Thakur, J. L. Conca, G.R. Choppin (USA)

PA4 Redox Reactions and Radiolysis Effects

- PA4-1** Se BEHAVIOUR IN THE BOOM CLAY: SPECTROSCOPIC EVIDENCE
E. Breynaert, D. Dom, J. Vancluysen, A. Scheinost, A. Maes (Belgium, Germany)
- PA4-2** REDUCTION OF NEPTUNYL (NpO_2^+) BY GREEN RUST SODIUM SULFATE
B.C. Christiansen, H. Geckeis, C. Marquardt, D. Schild, M. Plaschke, T. Wiss, S.L.S. Stipp (Denmark, Germany)
- PA4-3** RADIOLYTIC OXIDATION OF MOX SPENT FUEL IN PRESENCE OF WATER
C. Jégou, J. De Bonfils, R. Caraballo, V. Broudic, S. Peuket, D. Roudil (France)
- PA4-4** REDOX REACTIONS INDUCED BY HYDROGEN IN DEEP GEOLOGICAL NUCLEAR WASTE REPOSITORY
L. Truche, G. Berger, C. Destrigneville, D. Guillaume, E. Giffaut (France)
- PA4-5** REDOX BEHAVIOUR AND COORDINATION OF NEPTUNIUM IN PRESENCE OF INORGANIC OXOANIONS
C. Hennig, A. Ikeda-Ohno, S. Tsushima, K. Takao, S. Takao, A.C. Scheinost, G. Bernhard (Germany, Japan)
- PA4-6** X-RAY ABSORPTION AND PHOTOELECTRON SPECTROSCOPY INVESTIGATION OF SELENITE REDUCTION BY FeII-BEARING MINERALS
A.C. Scheinost, R. Kirsch, D. Banerjee, A. Fernandez-Martinez, H. Zaenker, H. Funke, L. Charlet (Germany, France)
- PA4-7** Np(V) - HUMIC SUBSTANCES REDOX INTERACTION MODELLING USING 9,10-ANTHRAHYDROQUINONE-2,6-DISULFONATE
N.S. Shcherbina, A.P. Novikov, S.N. Kalmykov, I.V. Perminova, C.M. Marquardt, N.L. Banik (Russia, Germany)
- PA4-8** DISSOLUTION OF UO_2 AND SODIUM URANATE AT ALKALINE pH IN THE PRESENCE OF HYDROGEN PEROXIDE
S. Meca, J. Giménez, I. Casas, V. Martí, J. de Pablo (Spain)

- PA4-9** REDUCTIVE TRANSFORMATION OF U/Tc BY MIXED VALENT IRON OXIDES: DEVELOPMENT OF MODEL MATERIALS AND SIMULATIONS
J. Liu, O. Qafoku, S. Kerisit, T. Droubay, C. Wang, T. Peretyazhko, K.M. Rosso, J.M. Zachara (USA)
- PA4-10** INVESTIGATION OF THE REDUCTION OF URANIUM(VI) BY IRON(II) AT NEAR NEUTRAL pH
J.F. Lucchini, M. Borkowski, M.K. Richmann, H. Khaing, J. Swanson, D.T. Reed (USA)
- PA4-11** THEORETICAL STUDY OF FERROUS-FERRIC ELECTRON TRANSFER REACTIONS IN AQUEOUS SOLUTION AND AT THE IRON OXIDE-WATER INTERFACE
P. Zarzycki, S. Kerisit, K.M. Rosso (USA)
- PA4-12** HETEROGENEOUS REDUCTION OF MOBILE PERTECHNETATE [Tc(IV)O₄⁻] TO IMMOBILE Tc(IV) FORMS BY HANFORD AQUIFER SEDIMENTS THAT VARY IN SOLID-PHASE Fe(II)
J.M. Zachara, T. Peretyazhko, C. Liu, C.T. Resch, S. Heald, R. Kukkadapu (USA)
- PB2** **Diffusion and Other Migration Processes**
- PB2-1** INFLUENCE OF ORGANIC MATTER COMPLEXATION ON RADIONUCLIDE MIGRATION IN BOOM CLAY: EXPERIMENTS AND GEOCHEMICAL MODELLING
E. Martens, N. Maes (Belgium)
- PB2-2** INVESTIGATION OF THE DIFFUSION OF RADIONUCLIDES WITH IMPROVED CAPILLARY IN-DIFFUSION TECHNIQUE
W.Y. Tian, T. Chen, M. Sun, C. Li, L.H. Wang, X.Y. Liu, H.L. Li, X.Y. Wang, C.L. Liu (China)
- PB2-3** CHARACTERISATION OF PORE SPACE BY ¹⁴C-PMMA IMPREGNATION IN SITU
M. Siitari-Kauppi, P. Sardini, M. Kelokaski, A. Möri, K. Ota, A. Martin, K.-H. Hellmuth (Finland, France, Switzerland, Japan)
- PB2-4** VERIFIED MODELING OF MATRIX-DIFFUSION
M. Voutilainen, P. Kekäläinen, A. Poteri, M. Siitari-Kauppi, P. Hölttä, A. Hautojärvi, J. Timonen (Finland)
- PB2-5** SORPTION AND DIFFUSION BEHAVIORS OF NEPTUNIUM(V) IN OPALINUS CLAY
S. Amayri, D. Fröhlich, T. Wu, J. Drebert, L.R. Van Loon, T. Reich (Germany, Switzerland)

MONDAY

- PB2-6** EFFECT OF EXCHANGEABLE CATIONS ON APPARENT DIFFUSION OF Ca^{2+} IONS IN Na- AND Ca-MONTMORILLONITE MIXTURES
T. Kozaki, T. Sawaguchi, S. Sato (Japan)
- PB2-7** A THERMODYNAMIC MODEL ON THE EFFECT OF SALINITY ON MICROPORE STRUCTURE OF Na-MONTMORILLONITE
H. Sato (Japan)
- PB2-8** MODELLING ON SWELLING OF Na-BENTONITE IN THE SATURATED CONDITION BASED ON THE THERMODYNAMIC PROPERTIES OF INTERLAYER WATER IN Na-MONTMORILLONITE
H. Sato (Japan)
- PB2-9** DIFFUSION AND SORPTION BEHAVIORS OF Th AND Eu IN SEDIMENTARY ROCK IN THE PRESENCE OF HUMIC SUBSTANCE
Y. Seida, Y. Tachi, M. Terashima, T. Nakazawa, N. Yamada, M. Yui (Japan)
- PB2-10** DIFFUSION OF NEPTUNIUM(V) IN COMPACTED MONTMORILLONITE: EFFECTS OF SALINITY AND CARBONATE
Y. Tachi, Y. Seida, T. Nakazawa, N. Yamada, K. Yotsuji, T. Suyama, M. Ochs, M. Yui (Japan, Switzerland)
- PB2-11** SORPTION AND DIFFUSION OF NA IN COMPACTED FEBEX BENTONITE
M. García-Gutiérrez, J.L. Cormenzana, T. Missana, M. Mingarro, U. Alonso (Spain)
- PB2-12** IN SITU DIFFUSION EXPERIMENTS: EFFECTS OF WATER SAMPLING ON TRACER CONCENTRATIONS AND ESTIMATED DIFFUSION AND SORPTION PARAMETERS
A. Naves, S. Dewonck, J. Camper (Spain, France)
- PB2-13** Na-MONTMORILLONITE SWELLING PRESSURE IN PURE WATER AND NaCl SOLUTIONS
O. Karnland, M. Birgersson (Sweden)
- PB2-14** A SEMI-EMPIRICAL APPROACH FOR ESTIMATING EFFECTIVE DIFFUSION COEFFICIENTS IN SEDIMENTARY ROCKS FOR SAFETY ASSESSMENT PURPOSES
L. R. Van Loon (Switzerland)

- PB2-15** A MULTI-SCALE EVALUATION OF THE EFFECTS OF MINERAL-POROSITY SPATIAL VARIABILITY ON SOLUTE DIFFUSION IN CLAYROCK GEOLOGICAL FORMATIONS CONSIDERED FOR HOSTING REPOSITORIES FOR RADIOACTIVE WASTES
J.-C. Robinet, P.L. Sardini, S. Altmann, L. Van Loon (France, Switzerland)
- PB2-16** MOLECULAR SIMULATIONS OF THE DIFFUSION OF URANYL CARBONATE SPECIES IN AQUEOUS SOLUTIONS AND AT THE MINERAL-WATER INTERFACE
S. Kerisit, C. Liu (USA)
- PB2-17** URANIUM(VI) DIFFUSION IN LOW-PERMEABILITY SUBSURFACE MATERIALS
C. Liu, L. Zhong, J. Zachara (USA)
- PB2-18** MIGRATION PARAMETERS OF ^{99}Tc , ^{137}Cs , ^{90}Sr , AND $^{239+240}\text{Pu}$ FOR SOILS IN SOUTH KOREA
D.K. Keum, I. Jun, K.M. Lim, Y.H. Choi, C.W. Lee (Korea)
- PB4** **Effects of Biological and Organic Materials**
- PB4-1** ROLE OF MICROBIAL ACTIVITY ON CORROSION OF STEEL USED FOR RADIOACTIVE WASTE DISPOSAL
H. El Hajj, A. Abdelouas, B. Grambow (France)
- PB4-2** NON DISTURBING MASS SPECTROMETRY METHOD OF CHARACTERIZATION OF ORGANICS FROM CLAY PORAL WATER
S. Huclier, C. Landesman, H. Rogniaux, F. Monteau, B. Grambow (France)
- PB4-3** BIOMINERALIZATION OF REE PHOSPHATE NANO-MINERALS BY SACCHAROMYCES CEREVISIAE
M. Jiang, T. Ohnuki, K. Tanaka, Y. Suzuki, S. Utsunomiya (Japan)
- PB4-4** MICROBIAL REDOX REACTION OF URANIUM - EFFECTS OF ORGANIC ACIDS
T. Ohnuki, Y. Suzuki, T. Nankawa, N. Kozai, A.J. Francis (Japan, USA)
- PB4-5** ACETATE BIODEGRADATION BY NITRATE REDUCING BACTERIA AT HIGH PH AND HIGH CALCIUM CONCENTRATION CONDITIONS
T. Yoshida (Japan)

MONDAY

- PB4-6** THE EFFECTS OF HUMIC SUBSTANCE FRACTIONATION ON RADIONUCLIDE BEHAVIOUR IN TERNARY SYSTEMS
N. Li, P. Ivanov, L. Abrahamsen, N. Bryan, N. Evans, T. Lewis, P. Warwick (UK)
- PB4-7** RATES AND MECHANISMS OF BIOGENIC URANINITE CORROSION IN GROUNDWATER AT THE RIFLE IFRC SITE
J.R. Bargar, R. Bernier-Latmani, K.M. Campbell, D.E. Giammar, P.E. Long, K.-U. Ulrich, H. Veeramani (USA, Switzerland)
- PB4-8** EFFECT OF NATURAL ORGANIC MATTER ON PLUTONIUM BEHAVIOR IN SILICA SAND AND ROCKY FLATS PLUTONIUM CONTAMINATED SOIL
A.D. Diaz, B.D. Honeyman (USA)
- PB4-9** THE ROLE OF DISSOLVED AND PARTICULATE ORGANIC CARBON IN BIOSTIMULATED URANIUM ATTENUATION
L. Figueroa, J. Hartmann, E. Leshner, J. Ranville, B. Honeyman, K. Campbell, K. Williams, J. Davis, P. Long (USA)
- PB4-10** MICROBIAL EFFECTS ON THE SORPTION OF URANIUM: KINETICS AND DISTRIBUTION RATIOS FOR TUFF SAMPLES FROM THE NEVADA TEST SITE
J.C. Fisher, S.A. Faye, K.R. Czerwinski, D.P. Moser (USA)
- PB4-11** Fe-MINERALOGY OF THE RIFLE ALLUVIAL SEDIMENTS: IMPLICATIONS FOR IN SITU BIOREMEDIATION AND LONG TERM BEHAVIOR OF U(VI)
R.K. Kukkadapu, J.P. McKinley, B.W. Arey, N.P. Qafoku, S.D. Kelly, C. Wang, P.E. Long (USA)
- PB4-12** BIOGEOCHEMICAL CHARACTERIZATION OF PROCESSES GOVERNING THE FATE AND TRANSPORT OF URANIUM IN NATURALLY REDUCED AND BIOSTIMULATED SEDIMENT
A.L. N'Guessan, N.P. Qafoku, R. Kukkadapu, Z. Wang, K.H. Williams, A. Peacock, S. Yabusaki, P.E. Long (USA)
- PB4-13** PLUTONIUM OXIDATION STATE DISTRIBUTION IN MICROBIOLOGICALLY ACTIVE SUBSURFACE SYSTEMS
D.T. Reed, J.S. Swanson, H. Khaing, D. Olive, R. Deo, J. Terry, B.E. Rittmann (USA)
- PB4-14** MOBILIZATION OF PLUTONIUM BY ORGANIC MATTER DECOMPOSITION PRODUCTS AND MICROBIAL METABOLITES
C. Xu, P.H. Santschi, J.Y. Zhong, P.G. Hatcher, A.J. Francis, C.J. Dodge, K.A. Roberts, C.-C. Hung, B.D. Honeyman (USA, Taiwan)

PB4-15 BIODEGRADATION OF ORGANIC CHELATING AGENTS IN THE WIPP: IMPLICATIONS FOR ACTINIDE SOLUBILITY
J.S. Swanson, H. Khaing, D. Ua Cearnaigh, D.T. Reed (USA)

PB6 Natural Analogues

PB6-1 PALEO-REDOX BOUNDARIES IN FRACTURED GRANITE
K. Dideriksen, B.C. Christiansen, C. Frandsen, T. Balic-Zunic, S. Mørup, S.L.S Stipp (Denmark)

PB6-2 UNDERSTANDING THE URANIUM BEHAVIOUR IN ASKOLA ORE DEPOSIT USING PHREEQC MODELLING
L. Jokelainen, M. Markovaara-Koivisto, D. Read, A. Lindberg, M. Siitari-Kauppi, K.-H. Hellmuth (Finland, UK)

PB6-3 NATURAL IODINE IN CALLOVO-OXFORDIEN FORMATION: NEW INSIGHT FROM CHEMICAL AND SPECTROSCOPIC ANALYSIS AND IMPLICATIONS FOR IODINE FATE IN GEOLOGICAL DISPOSALS
F. Claret, C. Lerouge., T. Laurieux, M. Bizi, T. Conte, J.P. Ghestem, G. Wille, T. Sato, E.C. Gaucher, C. Tournassat (France, Japan)

PB6-4 REDISTRIBUTION OF REE, U AND TH DURING ZIRCON ALTERATION IN ASSOCIATION WITH THERMAL EVENTS
K. Horie, Y. Tsutsumi, M. Cho, Y. Morishita, H. Hidaka (Japan)

PC1 Data Selection and Evaluation

PC1-1 GDP - A GEOCHEMICAL DATABASE PROCESSOR - DEVELOPMENT STATUS AND CAPABILITIES
S. Salah, H. De Soete, L. Wang (Belgium)

PC1-2 A SPECIATION ANALYSIS CODE FOR CHINA'S HIGH-LEVEL RADIOACTIVE WASTE DISPOSAL
T. Chen, X.Y. Wang, M.Sun, W.Y.Tian, C.Li, X. Y. Liu, L.H.Wang, C.L. Liu (China)

PC1-3 THEREDA - A JOINT GERMAN PROJECT TOWARDS A THERMODYNAMIC REFERENCE DATABASE
M. Altmaier, V. Brendler, S. Gester, S. Hagemann, H.-J. Herbert, C.M. Marquardt, H.C. Moog, V. Neck, A. Richter, T. Schrage, W. Voigt, S. Wilhelm, G. Wollmann (Germany, Switzerland)

MONDAY

- PC1-4** JAEA THERMODYNAMIC DATABASE FOR PERFORMANCE ASSESSMENT OF GEOLOGICAL DISPOSAL OF HIGH-LEVEL RADIOACTIVE AND TRU WASTES: FUNDAMENTAL PLAN AND STATUS OF SELECTION OF THERMODYNAMIC DATA
A. Kitamura, K. Fujiwara, M. Shibata, Y. Tachi, R. Doi, Y. Yoshida, T. Yamaguchi, M. Yui (Japan)
- PC1-5** ANALYSIS OF PARAMETER IDENTIFIABILITY OF THE IN SITU DIFFUSION AND RETENTION (DR) EXPERIMENT
J. Samper, S. Yi, A. Naves (Spain)
- PC3** **Development and Application of Models**
- PC3-1** A PREDICTIVE MODEL FOR ANION EXCLUSION IN COMPACTED NA-MONTMORILLONITE
C. Tournassat (France)
- PC3-2** MODELLING OF THE RELEASE AND TRANSPORT OF TOXIC SUBSTANCES IN A HIGH LEVEL RADIOACTIVE WASTE REPOSITORY IN CLAY FORMATIONS
H.-J. Herbert, H.C. Moog, M. Xie (Germany)
- PC3-3** A DIMENSIONLESS ANALYSIS FOR PRELIMINARY EXAMINATIONS OF CHEMICAL OSMOSIS EFFECTS IN LOW-PERMEABILITY FORMATIONS
M. Takeda, T. Hiratsuka, K. Ito (Japan)
- PC3-4** POST CLOSURE SAFETY ASSESSMENT FOR PYRO-PROCESS WASTE
C.-H. Kang, Y.S. Hwang (Korea)
- PC3-5** A GOLDSIM MODELING APPROACH TO EVALUATION OF A WELL SCENARIO AND DILUTION AROUND A RADIOACTIVE WASTE REPOSITORY
Y.-M. Lee, Y. Hwang (Korea)
- PC3-6** RADIONUCLIDE MIGRATION FROM A REPOSITORY OF LIQUID NUCLEAR WASTE AT THE SIBERIAN MOUNTAIN CHEMICAL INDUSTRIAL COMPLEX (MCIC)
M.B. Bukaty, V.A. Zuev, O.L. Gaskova (Russia)
- PC3-7** GEMIPM2K: A STANDALONE SOLVER OF COMPLEX EQUILIBRIA FOR APPLICATION IN (RADIO) GEOCHEMICAL COUPLED MODELING CODES
D.A. Kulik, T. Wagner, K.V. Chudnenko, S.V. Dmytrieva, F.F. Hingerl, U. Berner, G. Kosakowski (Switzerland, Ukraine)

PC3-8 A BAYESIAN GEOSTATISTICAL MODEL FOR INTEGRATING SPATIALLY HETEROGENEOUS HYDROGEOLOGICAL AND GEOCHEMICAL PROPERTIES INTO PROBABILISTIC PREDICTION OF RADIONUCLIDE TRANSPORT
H. Murakami, X. Chen, H. Bai, Y. Rubin (USA)

PC3-9 THE CFM (COLLOID FORMATION AND MIGRATION) PROJECT AT THE GRIMSEL TEST SITE (GTS, SWITZERLAND): MODEL INTERPRETATIONS OF FIRST FIELD EXPERIMENTS
P. Reimus, T. Schäfer, H. Seher, W. Hauser, C. Walther, H. Geckeis, C. Degueldre, T. Trick, I. Blechschmidt, I. Gaus (USA, Germany, Switzerland)

PC3-10 PORE-SCALE SIMULATION AND UPSCALING OF URANIUM TRANSPORT IN GROUNDWATER INCORPORATING INTRA-GRAIN MASS TRANSFER PROCESSES
T.D. Scheibe, A.M. Tartakovsky, B.J. Palmer (USA)

PC3-11 RETARDATION IN UNSATURATED SEDIMENTS WITH MOBILE-IMMOBILE WATER: CONCEPTUAL FRAMEWORK AND EXPERIMENTAL APPLICATIONS
D.M. Wellman, A.P. Gamedainger, D.I. Kaplan, D.P. Jansik, R.J. Serne (USA)

PC4 Model Validation

PC4-1 MODEL VERIFICATION AND QUANTIFICATION OF CONSERVATISM OF PERFORMANCE ASSESSMENT CALCULATIONS BY SORPTION MODEL REDUCTION: CASE STUDY ON NEAR FIELD CS MIGRATION IN CALLOVO- OXFORDIAN CLAY
E. Weetjens, E. Martens, D. Jacques (Belgium)

PSS Special Session

PSS-1 INTERCOMPARISON EXERCISE ON REDOX DETERMINATION METHODS: A KEY ACTIVITY WITHIN THE EURATOM FP7 “RECOZY” PROJECT
M. Altmaier, G. Buckau, B. Kienzler (Germany)

PSS-2 EURATOM FP7 COLLABORATIVE PROJECT “REDOX PHENOMENA CONTROLLING SYSTEMS” (CP RECOZY)
G. Buckau, L. Duro, B. Kienzler (Germany, Spain)

Tuesday (22. September)

Session 6 A3: Complexation With Inorganic and Organic Ligands

Chair: *V. Vallet, I. Grenthe*

- 8:30 am AN OVERVIEW ON STUDIES OF STRUCTURES AND REACTIVITIES OF URANYL(V) COMPLEXES **A3-1**
Y. Ikeda (INVITED) (Japan)
- 9:15 am A QUANTUM CHEMICAL AND LONG-TIME MOLECULAR DYNAMICS STUDY OF THE COORDINATION OF Th(IV) IN AQUEOUS SOLVENT **A3-2**
F. Réal, M. Trumm, V. Vallet, B. Schimmelpfennig, J.-P. Flament, M. Masella (France, Germany)
- 9:40 am THEORETICAL STUDIES OF ELECTRONIC STRUCTURE OF ACTINIDE COMPLEXES **A3-3**
P. Yang (USA)
- 10:05 am COMPLEXATION OF NEPTUNIUM(V) WITH PYOVERDIN **A3-4**
H. Moll, A. Johnsson, M. Schäfer, M. Glorius, K. Pedersen, H. Budzikiewicz, G. Bernhard (Germany)
- 10:30 am BREAK

Session 7 A2: Solid Solution and Secondary Phase Formation

Chair: *K. M. Rosso, S. B. Clark*

- 10:50 am PATHWAYS OF HYDROXYLAPATITE TRANSFORMATION INTO NdPO₄(s) **A2-1**
C.R. Armstrong, S.B. Clark (USA)
- 11:15 am MECHANISMS OF Ln(III) UPTAKE BY THE CLAY MINERAL HECTORITE: A POLARIZED EXAFS APPROACH **A2-2**
N. Finck, M.L. Schlegel, K. Dardenne, D. Bosbach (Germany)

TUESDAY

11:40 am TECHNETIUM INCORPORATION IN HEMATITE **A2-3**
F.N. Skomurski, K.M. Rosso, K.M. Krupka, B.P. McGrail (USA)

12:05 pm (Ca,Sr)CO₃ AQUEOUS - SOLID SOLUTION SYSTEMS: FROM ATOMISTIC CALCULATIONS TO GEOCHEMICAL MODELING **A2-4**
D.A. Kulik, V.L. Vinograd, N. Paulsen, B. Winkler (Switzerland, Germany)

12:30 pm BREAK

Session 8 A6: Colloid Formation

Chair: St. Kalmykov, C.L. Liu

2:00 pm PREDICTION OF COLLOID MEDIATED RADIONUCLIDE TRANSPORT IN DEEP GEOLOGICAL NUCLEAR WASTE REPOSITORIES: CURRENT KNOWLEDGE **A6-1**
T. Schäfer (INVITED) (Germany)

2:45 pm THE REACTIVITY OF THE PLUTONIUM COLLOID SURFACE: IMPLICATIONS FOR ENVIRONMENTAL TRANSPORT **A6-2**
R.E. Wilson, L. Soderholm (USA)

3:10 pm INTERACTION OF U(VI), Np(V), AND Pu(V) WITH SILICA COLLOIDS UNDER VARIOUS TEMPERATURES **A6-3**
O.N. Batuk, St.N. Kalmykov, D.N. Batuk, A.A. Shiraev (Russia)

3:35 pm GENERATION OF BENTONITE COLLOIDS IN A DEEP GEOLOGICAL REPOSITORY: EXPERIMENTAL STUDY AT THE FEBEX TUNNEL (GRIMSEL TEST SITE, SWITZERLAND) **A6-4**
T. Missana, U. Alonso, N. Albarran, Th. Schäfer, H. Seher, W. Hauser (Spain, Germany)

4:00 pm BREAK

Session 9 A7: Experimental Methods

Chair: *J.-I. Yun, G. Buckau*

- 4:20 pm APPLICATION OF PHOTOTHERMAL DEFLECTION TECHNOLOGY TO LASER-INDUCED BREAKDOWN DETECTION AND LASER-INDUCED PHOTOACOUSTIC SPECTROSCOPY **A7-1**
E.C. Jung, H.-R. Cho, W.H. Kim, K. Song (Korea)
- 4:45 pm ADSORPTION OF Eu(III) ON A HETEROGENEOUS SURFACE STUDIED BY TIME-RESOLVED LASER FLUORESCENCE MICROSCOPY (TRLFM) **A7-2**
K. Ishida, T. Kimura, T. Saito, S. Tanaka (Japan)
- 5:10 pm IMPEDANCE SPECTROSCOPY AS A SORPTION PROXY FOR CRYSTALLINE ROCK **A7-3**
M. André, M.E. Malmström, I. Neretnieks (Sweden)
- 5:35 pm BREAK

Session 10 Poster Session II (7:00 – 10:00 pm)

Chair: *T. Rabung, B. Rotenberg*

PA2 Solid Solution and Secondary Phase Formation

- PA2-1** STRUCTURAL INCORPORATION OF NEPTUNYL(V) INTO CALCITE - INTERFACIAL REACTIONS
F. Heberling, M.A. Denecke, J. Lützenkirchen, D. Bosbach (Germany)
- PA2-2** SITE-SELECTIVE TIME RESOLVED LASER FLUORESCENCE SPECTROSCOPY ON Ca²⁺-BEARING MINERAL PHASES DOPED WITH Cm³⁺
M. Schmidt, T. Stumpf, C. Walther, H. Geckeis, Th. Fanghänel (Germany)
- PA2-3** (Ba,Sr)SO₄ SOLID SOLUTION - AQUEOUS SOLUTION SYSTEM: ATOMISTIC CALCULATIONS AND EXPERIMENTAL CONSTRAINTS
V.L. Vinograd, D.A. Kulik, C.M. Pina, A. Fernandez Gonzalez, M. Prieto, B. Winkler (Germany, Switzerland, Spain)

PA2-4 CHARACTERIZATION OF TRANSURANIC OXIDES FORMED BY BIOTIC AND ABIOTIC PROCESSES USING X-RAY ABSORPTION FINE STRUCTURE (XAFS) SPECTROSCOPY
S. Conradson, H. Boukhalfa, M. Wilkerson, J. Bargar, L. Tandon, D. Peterson, J. Mitchell, R. Roback, D.L. Clark, D.E. Hobart (USA)

PA2-5 SYNTHESIS AND CHARACTERIZATION OF TECHNETIUM WASTE FORMS FOR THE UREX+ PROCESS
F. Poineau, E. Mausolf, T. Hartmann, K. Czerwinski, G.D. Jarvinen (USA)

PA5 Solid-Water Interface Reactions

PA5-1 ANOMALOUS URANIUM SORPTION TO FERRIHYDRITE IN THE PRESENCE OF CITRATE
R.N. Collins, T.E. Payne, T.D. Waite (Australia)

PA5-2 URANYL UPTAKE BY PYRITE IN BATCH EXPERIMENTS IN PRESENCE OF CARBONATE AND ORGANIC LIGANDS INDICATIONS FOR REDUCTION AND ADSORPTION
C. Bruggeman, N. Maes (Belgium)

PA5-3 INFLUENCE OF DISSOLVED HUMIC SUBSTANCES ON Eu(III) ADSORPTION ON ILLITE
C. Bruggeman, D.J. Liu, N. Maes (Belgium)

PA5-4 SORPTION EXPERIMENTS AND MODELING OF Am(III) AND Th(IV) ONTO PURIFIED Na-ILLITE, Na-MONTMORILLONITE AND BOOM CLAY
S. Salah, N. Maes, L. Wang, M. Van Gompel (Belgium)

PA5-5 Se(IV) SORPTION ON TiO₂: KINETIC AND SURFACE COMPLEXATION MODELING
Z. Guo, K. Shi, X. Wang, S. Wang, W. Wu (China)

PA5-6 INTERACTION OF CERIUM WITH Fe-(OXYHYDR)OXIDES
S. Nedel, K. Dideriksen, B.C. Christiansen, N. Bovet, S.L.S. Stipp (Denmark)

PA5-7 SORPTION OF Eu(III) ON COLLOIDAL SILICA
P. Hölttä, M. Hakanen, M. Lahtinen, J. Lehto, P. Juhola (Finland)

PA5-8 INVESTIGATIONS ON COLLOIDAL CORUNDUM USING ATR-FTIR AND COHERENCE PROBE MICROSCOPY TO THE STUDIES AND THE MODELLING OF SORPTION PROCESSES
E. Halter, B. Madé, M. Del Nero, R. Barillon, P. Montgomery, S. Georg, C. Galindo, D. Montaner, I. Fabing, C. Copeland, C. Hoffmann (France)

- PA5-9** EFFECT OF ORGANIC LIGANDS ON THE SORPTION OF NICKEL ONTO CLAY MINERALS
C. Mansour, L- Vu-Do, P. Vigne, F. Foct, H. Catalette (France)
- PA5-10** ADSORPTION OF Zn(II) IN ABSENCE AND PRESENCE OF HUMIC SUBSTANCES ON GRANITE: A KINETIC APPROACH
A. Mansel, F. Fellmer (Germany)
- PA5-11** SORPTION OF U(VI) ONTO TiO₂. A VIBRATIONAL SPECTROSCOPIC ANALYSIS OF THE SORPTION PROCESSES
H. Foerstendorf, K. Müller, T. Meusel, V. Brendler, J. Comarmond, T.E. Payne, G. Lefèvre (Germany, Australia, France)
- PA5-12** STUDY OF NEPTUNIUM(V) SORPTION ON OPALINUS CLAY UNDER AEROBIC/ANAEROBIC CONDITIONS
D. Fröhlich, S. Amayri, J. Drebert, T. Reich (Germany)
- PA5-13** SORPTION OF URANIUM(VI) ON CLAY IN ABSENCE AND PRESENCE OF HUMIC ACID
C. Joseph, K. Schmeide, S. Sachs, G. Bernhard (Germany)
- PA5-14** ARTIFICIAL RADIONUCLIDES IN SEDIMENTS OF THE RIVER YENISSEI
E. Klemt, T. Semizhon, S. Röllin (Germany, Belarus, Switzerland)
- PA5-15** TRIVALENT METAL ION INTERACTION WITH ALUMINIUM OXIDES/HYDROXIDES
T. Kupcik, N. Huittinen, T. Rabung, J. Lützenkirchen, H. Geckeis, Th. Fanghänel (Germany, Finland)
- PA5-16** PHOTOEFFECTS ON U(VI) SORPTION ONTO TiO₂ STUDIED BY IN SITU ATR FT-IR SPECTROSCOPY
K. Müller, T. Meusel, R. Steudtner, H. Foerstendorf, V. Brendler, G. Bernhard (Germany)
- PA5-17** SORPTION OF Np(V) ONTO METAL OXIDE SURFACES: AN IN SITU ATR FT-IR SPECTROSCOPIC STUDY
K. Müller, H. Foerstendorf, V. Brendler, G. Bernhard (Germany)
- PA5-18** U(VI) SORPTION ON GRANITE: SORPTION PREDICTION AND EXPERIMENTS
C. Nebelung, V. Brendler (Germany)
- PA5-19** SPECTROSCOPIC STUDY AND SURFACE COMPLEXATION MODELING OF Np(V) SORPTION ON MONTMORILLONITE
T. Reich, S. Amayri, S. Dierking, B. Baeyens, R. Dahn, M.H. Bradbury, A.C. Scheinost (Germany, Switzerland)

TUESDAY

- PA5-20** TIME RESOLVED FLUORESCENCE SPECTROSCOPY OF Eu(III) SORPTION BY SILICA IN PRESENCE OF ALPHA HYDROXY ISOBUTYRIC ACID
A.S. Kar, B.S. Tomar, S.V. Godbole, V.K. Manchanda (India)
- PA5-21** STUDY ON THE SURFACE COMPLEXES OF Eu(III) ON KAOLINITE BY TIME-RESOLVED LASER FLUORESCENCE SPECTROSCOPY (TRLFS): TRLFS MEASUREMENT IN H₂O/D₂O SYSTEMS
K. Ishida, T. Saito, N. Aoyagi, T. Kimura, S. Nagasaki, S. Tanaka (Japan)
- PA5-22** MULTIVARIABLE FACTOR ANALYSIS FOR TIME-RESOLVED LASER FLUORESCENCE SPECTROSCOPY OF THE URANYL ADSORPTION ON GIBBSITE
H. Sao, K. Ishida, T. Saito, N. Aoyagi, S. Nagasaki, S. Tanaka (Japan)
- PA5-23** THE STABILITY OF NEPTUNIUM SORBED ON MAGNETITE SURFACES: ADSORPTION/DESORPTION EXPERIMENTAL STUDY
M. Takahashi, T. Saito, S. Nagasaki, S. Tanaka, Y. Iida, T. Yamaguchi (Japan)
- PA5-24** SORPTION OF RADIONUCLIDES ONTO GRANODIORITE AND FRACTURE-FILLING MATERIAL SAMPLED FROM THE WOLSONG LILW REPOSITORY, GYEONGJU, KOREA
M.H. Baik, S.S. Kim, J.K. Lee, S.Y. Lee, G.Y. Kim, S.T. Yun (Korea)
- PA5-25** SORPTION OF URANIUM AND NEPTUNIUM ONTO GRANITE: EFFECTS OF Eh AND CONSTITUENT MINERALS
J.K. Lee, M.H. Baik, S.S. Kim, K.C. Kang (Korea)
- PA5-26** THE POTENTIAL OF FERROUS MICA TO ADSORB AND RETAIN URANIUM
S.Y. Lee, M.H. Baik, J.W. Choi (Korea)
- PA5-27** μ PIXE STUDY OF URANIUM HETEROGENEOUS SORPTION ON GRANITE
U. Alonso, T. Missana, A. Patelli, M. García-Gutiérrez, N. Albarran, D. Ceccato, V. Rigato (Spain, Italy)
- PA5-28** SORPTION OF Cs, Sr, Ni, Eu, U, AND NP ONTO SOIL FROM THE LAXEMAR AREA
S. Holgersson, M. Malmström, S. Berglund (Sweden)

- PA5-29** MODELING THE SORPTION OF Ni(II), Am(III), Th(IV), Np(V), U(VI), AND Se(IV) ON CLAY MINERALS AND BENTONITE
M. Ochs, S. Kunze, M. Dahinden, Y. Tachi, M. Yui (Switzerland, Japan)
- PA5-30** THE SORPTION BEHAVIOUR OF CAESIUM ON OPALINUS CLAY: A COMPARISON BETWEEN INTACT AND CRUSHED MATERIAL
L.R. Van Loon, B. Baeyens, M.H. Bradbury (Switzerland)
- PA5-31** SORPTION OF SOME CATIONS AND ORGANIC POLLUTANTS ON ZEOLITES AND MODIFIED ZEOLITES
Y. Alan, H.N. Erten (Turkey)
- PA5-32** SORPTION OF Tc(IV) AND Tc(VII) TO ROCKS, MINERALS AND CEMENTS
N.D.M. Evans, R.J. Hallam (UK)
- PA5-33** SORPTION BEHAVIOUR OF CAESIUM AND STRONTIUM ON BENTONITE AND AMORPHOUS MAGNESIUM HYDROXIDE
S.L. Jain, K. Farrow, E. Young, K. Aslop, N. Evans, P. Warwick (UK)
- PA5-34** FEASIBILITY OF AN ADDITIVITY APPROACH FOR MODELLING TERNARY SYSTEMS (HUMIC ACID - METAL - MINERAL)
T. Lewis, P. Warwick, N.D.M. Evans (UK)
- PA5-35** INTERACTIONS OF PLUTONIUM(VI) WITH MIXED MANGANESE/IRON OXIDE MINERALS
Y. Hu, L. Schwaiger, E. Cristiano, H. Nitsche (USA)
- PA5-36** QUANTUM-MECHANICAL CALCULATIONS OF AQUEOUS ACTINIDE ADSORPTION ONTO HEMATITE (001)
L.C. Shuller, J. Poling, R.C. Ewing, U. Becker (USA)
- PA5-37** EFFECT OF PHOSPHATE ON URANIUM(VI) IMMOBILIZATION IN THE PRESENCE OF IRON(III) (OXY)HYDROXIDES
A. Singh, K.-U. Ulrich, J.G. Catalano, D.E. Giammai (USA)
- PA5-38** THE ROLE OF CLAY MINERALS IN U(VI) SORPTION AND DESORPTION AT THE U.S. HANFORD VADOSE ZONE SEDIMENTS
Z. Wang, J.-F. Boily, J.M. Zachara, Y.X. Xia, D.A. Moore, C. Liu (USA)

TUESDAY

- PA5-39** INTERACTION OF PLUTONIUM WITH MONTMORILLONITE: SURFACE COMPLEXATION AND ION EXCHANGE
M. Zavarin, B.A. Powell, M. Bourbin, A.B. Kersting (USA, France)
- PA5-40** SORPTION OF Eu(III) ON ATTAPULGITE STUDIED BY BATCH, XPS AND EXAFS TECHNIQUES
Q.H. Fan, X.K. Wang, W.S. Wu (China)
- PA5-41** THE CHARACTERIZATION OF ZSM-5 ZEOLITE AND ITS APPLICATION IN THE REMOVAL OF Eu(III) FROM AQUEOUS SOLUTIONS
Q.H. Fan, W.S. Wu, D.D. Shao, X.K. Wang (China)
- PA5-42** INFLUENCE OF SILICATES COATING ON THE RETENTION OF SELENIUM (IV) ON Fe_3O_4
N. Jordan, N. Marmier, J.-J. Ehrhardt, E. Giffaut (France)

PA6 Colloid Formation

- PA6-1** ANALYSIS OF COLLOIDS RELEASED FROM BENTONITE AND CRUSHED ROCK
M. Lahtinen, P. Hölttä, M-L. Riekkola, J. Lehto (Finland)
- PA6-2** DISTRIBUTION OF Cs AND Am IN THE SOLUTION-BENTONITE COLLOIDS-GRANITE TERNARY SYSTEM: EFFECT OF ADDITION ORDER AND SORPTION REVERSIBILITY
K. Iijima, T. Tomura, M. Tobita, Y. Suzuki (Japan)
- PA6-3** EXPERIMENTAL EVIDENCE OF RELEASE OF BENTONITE COLLOIDS INTO FRESH WATER
M. Jansson (Sweden)
- PA6-4** PLUTONIUM COLLOID FORMATION AND STRUCTURAL ASSOCIATION WITH MINERALS
B.A. Powell, Z. Dai, M. Zavarin, A.B. Kersting (USA)

PA7 Experimental Methods

- PA7-1** SENSITIVE SIZE MEASUREMENT OF NANOPARTICLES BY TIME-RESOLVED LASER-INDUCED PLASMA
D.H. Lee, J.-I. Yun (Korea)

PB1 Sorption/Desorption Phenomena in Dynamic Systems

- PB1-1** EFFECT OF THE AQUEOUS PHASE COMPOSITION ON BENONITE STABILITY AND MIGRATION BEHAVIOR OF RADIONUCLIDES
H. Vinšová, J. Neuschlová, V. Jedináková-Krížová (Czech Republic)
- PB1-2** CHLORINE BEHAVIOUR IN NUCLEAR GRAPHITE: TEMPERATURE AND CORROSION EFFECTS
C.E. Vaudey, N. Toulhoat, N. Moncoffre, N. Béreud, C. Peaucelle, L. Raimbault, J.N. Rouzaud, L. Favergeon, M. Pijolat (France)
- PB1-3** RETENTION OF U(VI) IN CEMENTED WASTE FORMS UNDER SALINE CONDITIONS: SORPTION OR SOLUBILITY?
B. Kienzler, V. Metz, J. Lützenkirchen, Th. Rabung, A. Bauer, B. Brendebach (Germany)
- PB1-4** COMPARISON OF TWO SEQUENTIAL EXTRACTION PROTOCOLS FOR SPECIATION OF NATURAL RADIONUCLIDES IN SOIL SAMPLES
M. Štok, B. Smodiš (Slovenia)
- PB1-5** URANIUM SPECIATION IN CONTAMINATED SEDIMENTS FROM FLIX WATER RESERVOIR (CATALONIA, NE SPAIN)
S. Meca, J. Giménez, I. Casas, V. Martí, J. de Pablo (Spain)
- PB1-6** INVESTIGATION OF THE INTERPARTICLE POROSITY IN WATER SATURATED BENTONITE
M. Holmboe, S. Wold, M. Jonsson (Sweden)
- PB1-7** THE IMPACT OF SEA LEVEL RISE ON THE FATE OF RADIONUCLIDES AT CONTAMINATED NUCLEAR SITES
J. Eagling, P.J. Worsfold, W. Blake, M.J. Keith Roach (UK)
- PB1-8** EXPERIMENTAL AND MODELING INVESTIGATION OF U(VI) DESORPTION IN A CONTAMINATED AQUIFER
G.P. Curtis, M.B. Hay, K.J. Johnson, M. Kohler, J.A. Davis (USA)
- PB1-9** REALISTIC QUANTIFICATION OF RADIONUCLIDE RETARDATION IN INTACT ROCK
Q.H. Hu (USA)
- PB1-10** THE INFLUENCE OF SEDIMENT SIZE FRACTION AND ALKALINITY ON U(VI) DESORPTION RATES OF SEDIMENTS FROM A CONTAMINATED AQUIFER
K.J. Johnson, J.A. Davis (USA)

TUESDAY

- PB1-11** AN EVALUATION OF WHETHER PLUTONIUM BECOMES MORE STRONGLY BOUND TO SEDIMENTS OVER A TIME PERIOD OF DECADES
D. I. Kaplan, David P. Diprete, Kimberly A. Roberts (USA)
- PB1-12** MICRO-SCALE CAUSES AND MACRO-SCALE EFFECTS: URANIUM(VI) TRANSPORT EXPERIMENTS AND MODELING AT THE INTERMEDIATE SCALE
A. Miller, D. Rodriguez, B. Honeyman (USA)
- PB1-13** EXAMINATION OF PLUTONIUM INTERACTIONS WITH VADOSE SEDIMENTS TREATED TO ENHANCE REDUCTION CAPACITY
B. A. Powell, A.R. Hixon, D. I. Kaplan, R. Kukkadapu, O. Qafoku (USA)
- PB1-14** CARBONATE-¹⁴C SORPTION AND DESORPTION TO LOW pH SEDIMENTS AND AGED CONCRETE
K.A. Roberts, D.I. Kaplan (USA)
- PB1-15** VERTICAL DISTRIBUTION OF URANIUM AND AMERICIUM IN SANDY SOIL CONTAINING MIXERD PLUTONIUM OXIDE PARTICLES
R.C. Gostic, J.M. Gostic, K.R. Czenwinski (USA)

PB3 Colloid Migration

- PB3-1** BENTONITE AND LATEX COLLOID MIGRATION EXPERIMENTS IN A GRANITE FRACTURE ON A METRE SCALE TO EVALUATE THE EFFECTS OF PARTICLE SIZE AND FLOW VELOCITY
P. Vilks, N.H. Miller, A. Vorauer (Canada)
- PB3-2** NATURAL ORGANIC MATTER MIGRATION IN CALLOVO- OXFORDIAN CLAY. PERCOLATION EXPERIMENTS
D. Durce, C. Landesman, B. Grambow (France)
- PB3-3** COLLOID MEDIATED RADIONUCLIDE MIGRATION UNDER SIMULATED GLACIAL MELT-WATER INTRUSION IN FRACTURED ROCKS (ÄSPÖ, SWEDEN): EXPERIMENT AND MODELLING
F. Huber, T. Schäfer, P. Gamazo, M. Dentz, M.W. Saaltink (Germany, Spain)

- PB3-4** BENTONITE COLLOID MEDIATED RADIONUCLIDE TRANSPORT IN A SHEAR ZONE: LABORATORY INVESTIGATIONS
H. Seher, R. Götz, W. Hauser, H. Geckeis, Th. Fanghänel, T. Schäfer (Germany)
- PB3-5** THE ROLE OF COLLOIDS IN URANIUM TRANSPORT: FACILITATING AND IMPEDING EFFECTS
H. Zänker, V. Brendler (Germany)
- PB3-6** GROUNDWATER NANOPARTICLES IN THE FAR-FIELD AT THE NEVADA TEST SITE
S. Utsunomiya, A.B. Kersting, R.C. Ewing (Japan, USA)
- PB3-7** STRONTIUM MIGRATION IN A CRYSTALLINE MEDIUM: EFFECTS OF THE PRESENCE OF BENTONITE COLLOIDS
N. Albarran, T. Missana, U. Alonso, M. García-Gutierrez, M. Mingarro, T. López-Torrubia (Spain)
- PB3-8** COLLOID TRANSPORT IN FRACTURE FILLING MATERIAL: THE ROLE OF SORPTION AND FILTRATION PROCESSES
S. García-García, S. Wold, M. Jonsson (Sweden)
- PB3-9** INCLUSION OF COLLOIDS IN RADIONUCLIDE TRANSPORT
S. Anton Gascon, P. Warwick (UK)
- PB3-10** TRANSPORT OF PU(VI) IN NATURAL ALLUVIUM BY NATURAL CALCITE COLLOIDS
A. Abdel-Fattah, S. Tarimala, E. Garcia, B. Martinez, S.D. Ware, P. Reimus, P. Lichtner, R. Roback (USA)
- PB3-11** MECHANICS OF Pu COLLOID-ENHANCED MIGRATION WITHIN SYMETRIC AND ASYMETRIC GROUNDWATER SYSTEMS
J.M. Schwantes, P.H. Santschi (USA)
- PB3-12** ADSORPTION OF COLLOIDS ON MINERAL SUBSTRATE AS A FUNCTION OF SURFACE TOPOGRAPHY AND ROUGHNESS-AN INTERFEROMETRIC STUDY
G. Darbha, Th. Schäfer, A. Lüttge, C. Fischer (Germany, USA)

PB5 Field and Large-Scale Experiments

- PB5-1** ASSESSMENT OF RADIONUCLIDE MOVEMENT AT AN AUSTRALIAN LEGACY RADIOACTIVE WASTE SITE
T.E. Payne, D.I. Cendón, R.N. Collins, S.I. Hankin, J.J. Harrison, C.E. Hughes, M.P. Johansen, J.R. Twining, T.D. Waite (Australia)

TUESDAY

- PB5-2** LONG TERM DIFFUSION EXPERIMENT (LTD), GRIMSEL TEST SITE (CH): STUDY OF RADIONUCLIDE MATRIX DIFFUSION ON FIELD AND LABORATORY SCALES
V. Havlova, A. Martin, J. Rueedi, A. Moeri, J. Eikenberg (Czech Republic, Switzerland)
- PB5-3** REACTIVE TRANSPORT OF ^{99}Tc , ^{239}Pu , AND NATURAL URANIUM IN PRYPIAT ZATON SAND (CHERNOBYL AREA, UKRAINE)
V. Phrommavanh, N. Audouin, N. Van Meir (France)
- PB5-4** LONG TERM IN SITU TRACER DIFFUSION TESTS IN THE CALLOVO-OXFORDIAN CLAY: RESULTS AND MODELLING
S. Dewonck, V. Blin, M. Descostes, J. Radwan, J. Samper, L. Zheng, A. Naves, C. Landesman (France, Spain)
- PB5-5** THE EXPERIMENTAL PLATFORM IN CHERNOBYL (EPIC): A FIELD STUDY OF RADIONUCLIDE MIGRATION
N. Van Meir, D. Bugai, V. Kashparov (France, Ukraine)
- PB5-6** THE CFM (COLLOID FORMATION AND MIGRATION) PROJECT AT THE GRIMSEL TEST SITE (GTS, SWITZERLAND): FIRST FIELD EXPERIMENTS
T. Schäfer, H. Seher, W. Hauser, C. Walther, H. Geckeis, C. Degueldre, M. Yamada, M. Suzuki, T. Missana, U. Alonso, T. Trick, I. Blechschmidt (Germany, Switzerland, Japan, Spain)
- PB5-7** ^{14}C AND NATURAL RADIOACTIVITY IN GROUNDWATER AND SOIL AROUND THE NUCLEAR POWER PLANT AT KYUNGJU REGION OF KOREA
K.Y. Lee, J.H. Lee, S.Y. Cho, Y.Y. Yoon, K.S. Koh (Korea)
- PB5-8** DISTRIBUTION OF ^{137}Cs AND ^3H OF THE SOIL AND GROUNDWATER AROUND RADIOACTIVE REPOSITORY SITE IN KOREA
Y.Y. Yoon, K.Y. Lee, E.Y. Kim, K.S. Ko (Korea)
- PB5-9** EXPERIMENTAL AND THEORETIC STUDY ON NUCLIDE MIGRATION UNDER DISPOSAL CONDITION
Z.S. Zhang, W.B. Zhou, Z.X. Sun (China)

PC2 Coupling Chemistry and Transport

- PC2-1** PROCESS-BASED GEOCHEMICAL MODELLING OF TRIVALENT LANTHANIDE/ACTINIDE UPTAKE AND MIGRATION IN BOOM CLAY
C. Bruggeman, S. Salah, E. Martens, D.J. Liu, L. Wang, N. Maes, S. Brassinnes (Belgium)

- PC2-2** EVALUATION OF DIFFUSION EXPERIMENTS BY A SIMPLE TRANSPORT MODEL INCLUDING MULTICOMPONENT ION-EXCHANGE AND SURFACE COMPLEXATION
D. Vopálka, L. Kraus, Z. Klika, K. Štamberg (Czech Republic)
- PC2-3** COUPLED GEOCHEMICAL AND MICROBIAL MODELS FOR POROUS AND FRACTURED MEDIA IN DEEP SUBSURFACE ENVIRONMENT
Q. Li, K. Ito (Japan)
- PC2-4** COUPLED THMC MODEL FOR THE FEBEX IN SITU TEST
L. Zheng, J. Samper (USA, Spain)
- PC2-5** PARAMETRIC STUDIES FOR TEMPERATURE CHANGES OF BENTONITE EXTRUSION AND IMPACTS ON RADIONUCLIDE MIGRATION IN THE EXCAVATED DAMAGED ZONE
R.A. Borrelli, O. Thivent, J. Ahn (USA)
- PC2-6** IMPLICATION OF BENTONITE ALTERATION ON RADIONUCLIDE MIGRATION IN THE ENGINEERED BARRIER SYSTEM
R.A. Borrelli, S. Nagasaki, S. Tanaka (USA, Japan)

PHSS Hanford Special Session

- PHSS-1** IMPACT OF STRUCTURE AND CHEMICAL PROPERTIES OF IRON-CONTAINING MINERAL MICROPARTICULATES FROM HANFORD SITE SEDIMENTS ON TRANSFORMATIONS OF TECHNETIUM AND ORGANIC REDOX INDICATORS
D.R. Baer, R.L. Penn, J.C. Myers, J. Liu, K.M. Krupka, J.M. Zachara (USA)
- PHSS-2** SEPARATION, PRECONCENTRATION, AND ANALYSIS OF STABLE RUTHENIUM FISSION PRODUCT ISOTOPES
C.F. Brown, P.E. Dresel, K.N. Geiszler, E.T. Clayton (USA)
- PHSS-3** URANIUM CHARACTERIZATION AND RELEASE MODEL DEVELOPMENT FOR RESIDUAL WASTE IN HANFORD SINGLE-SHELL TANKS
K.J. Cantrell, K.M. Krupka, W.J. Deutsch (USA)
- PHSS-4** RELEASE MECHANISMS OF STRONTIUM AND CESIUM FROM CONTAMINATED HANFORD SEDIMENT UNDER SATURATED AND UNSATURATED COLUMN CONDITIONS
H. Chang, W. Um, K. Rod (USA)

TUESDAY

- PHSS-5** A NEW GEOSTATISTICAL MODEL FOR SITE CHARACTERIZATION AND ITS IMPACTS ON MODELING URANIUM TRANSPORT AT THE HANFORD 300 AREA
X. Chen, H. Bai, H. Murakami, Y. Rubin (USA)
- PHSS-6** BEYOND MICROPORES: THE SEARCH FOR CONTAMINANT URANIUM OUTSIDE OF LITHIC FRAGMENTS AT HANFORD, WASHINGTON
J.P. Icenhower, U. Wooyong, C.F. Brown, R.J. Serne, Z. Wang, C.L. Dodge, A.J. Francis (USA)
- PHSS-7** BIOGEOCHEMICAL REDOX TRANSFORMATIONS IN HANFORD 300 AREA SUBSURFACE SEDIMENTS
J.-H. Lee, J.K. Fredrickson, D.W. Kennedy, A. Plymale, A. Konopka, J.M. Zachara (USA)
- PHSS-8** GEOCHEMICAL CHARACTERIZATION AS AN EXPERIMENTAL COMPONENT IN DETERMINING U TRANSPORT AT THE HANFORD SITE IFRC
J.P. McKinley, A.L. Ward, J.M. Zachara, V.R. Vermuel, C.T. Resch, J.L. Phillips, D.A. Moore (USA)
- PHSS-9** WHAT INSIGHTS WERE FOUND FROM CHARACTERIZING SEDIMENTS, PORE WATERS, AND GROUNDWATER FROM NEW BOREHOLES IN HANFORD'S BP5 OPERABLE UNIT
R.J. Serne, G.S. Thomas, J.N. Christensen, C.F. Brown (USA)
- PHSS-10** THE EFFECTS OF SECONDARY PRECIPITATES ON TRANSPORT OF STRONTIUM AND CESIUM WITH VARYING WATER CONTENTS AT THE HANFORD SITE
W. Um, K. Rod, M. Flury, S. Choi, J. Choi (USA)
- PHSS-11** URANIUM CONTAMINATION OF VADOSE ZONE SEDIMENTS FROM THE HANFORD SITE 241-U SINGLE-SHELL TANK FARM, WASHINGTON, USA
B. Williams, W. Um, C.F. Brown, Z. Wang (USA)

Wednesday (23. September)

Session 11 Hanford Special Session

Chair: D. L. Clark, D. T. Reed

- 8:30 am MOLECULAR SPECIATION, GEOCHEMICAL REACTION, AND MICROSCOPIC TRANSPORT PROCESSES CONTROLLING CONTAMINANT MIGRATION AT THE HANFORD SITE
J. Zachara (INVITED) (USA) **SHS-1**
- 9:15 am VADOSE ZONE CONTAMINATION DUE TO RELEASES FROM HANFORD SITE TANKS
S.J. Eberlein, F.M. Mann, M. Connelly, D.A. Myers, H. Sydnor (USA) **SHS-2**
- 9:40 am ELECTRON ENERGY LOSS SPECTROSCOPY OF HANFORD TANK SLUDGE
E.C. Buck, *K.E. Draper, K. Czerwinski (USA)* **SHS-3**
- 10:05 am PROCESSES CONTROLLING FATE AND TRANSPORT OF URANIUM(VI) IN HANFORD'S 300 AREA
D.L. Stoliker, *D.B. Kent, J.A. Davis, J.M. Zachara (USA)* **SHS-4**
- 10:30 am PLUTONIUM CONTAMINATION ISSUES IN HANFORD SOILS AND SEDIMENTS: DISCHARGES FROM THE Z-PLANT COMPLEX
A.R. Felmy, *K.J. Cantrell, S.D. Conradson (USA)* **SHS-5**
- 10:55 am BREAK

Session 12 A3: Complexation With Inorganic and Organic Ligands

Chair: N. Evans, Y. Ikeda

- 11:15 am STUDY OF THE ROLE OF SULFUR FUNCTIONALITIES IN HUMIC ACIDS FOR URANIUM(VI) COMPLEXATION
S. Sachs, *T. Reich, G. Bernhard (Germany)* **A3-5**

WEDNESDAY

- 11:40 am CATION AND OXYANION INCORPORATION INTO URANYL PEROXIDE NANOCCLUSERS **A3-6**
D.K. Unruh, P.C. Burns (USA)
- 12:05 pm COMPLEXATION AND THERMODYNAMICS OF Cm(III) WITH FLUORIDE AND NITRATE AT ELEVATED TEMPERATURES STUDIED BY TIME-RESOLVED LASER FLUORESCENCE SPECTROSCOPY **A3-7**
A. Skerencak, P.J. Panak, V. Neck, W. Hauser, P. Lindqvist-Reis, R. Klenze, Th. Fanghänel (Germany)
- 12:30 pm **FREE**

Thursday (24. September)

Session 13 A5: Solid-Water Interface Reactions

Chair: T. Payne, B. S. Tomar

- 8:30 am DENSITY FUNCTIONAL MODELING OF URANYL ADSORPTION ON KAOLINITE **A5-5**
N. Roesch (INVITED) (Germany)
- 9:15 am HIGHLY ACCURATE FORCE FIELDS FOR F-ELEMENTS AND THEIR USE IN MOLECULAR DYNAMICS STUDIES OF MINERAL INTERFACIAL CHEMISTRY **A5-6**
A. Clark (USA)
- 9:40 am THEORETICAL INVESTIGATION OF THE SOLVATED CORUNDUM SURFACE **A5-7**
R. Polly, B. Schimmelpfennig, M. Flörsheimer, K. Kruse, A. AbdElMonem, R. Klenze, G. Rauhut, Th. Fanghänel, H. Geckeis (Germany)
- 10:05 am EFFECTS OF PROTONATION AND HYDROGEN BONDING OF SURFACE HYDROXYL SITES ON URANYL SORPTION TO GIBBSITE: COMPARISON BETWEEN DFT AND EXAFS STUDIES **A5-8**
T. Saito, T. Hattori, S. Nagasaki, S. Tanaka (Japan)
- 10:30 am BREAK

Session 14 B1 + B2 + B5: Migration Behaviour of Radionuclides

Chair: S. L. S. Stipp, T. Schäfer

- 10:50 am URANIUM SURFACE CONTAMINATION NEAR LE BOUCHET URANIUM-ORE PROCESSING FACILITY AND ITTEVILLE SITE **B5-1**
V. Phrommavanh, M. Descostes, C. Beaucaire, T. Vercouter, M.L. Schlegel, O. Marie, F. Bonniec, E. Prestel, M. DuBow, J.P. Gaudet (France)

THURSDAY

- 11:15 am MODELING THE SORPTION AND DESORPTION KINETICS OF Np(V) AND Pu(V) ON GOETHITE **B1-1**
R.M. Tinnacher, B.A. Powell, A.B. Kersting, M. Zavarin (USA)
- 11:40 am DIFFUSION OF SYNTHETIC NANOPARTICLES IN OPALINUS CLAY: CONCLUSIONS ON THE PORE GEOMETRY **B2-1**
J. Mibus, L.R. Van Loon (Switzerland)
- 12:05 pm MIGRATION OF URANIUM IN THE PRESENCE OF NATURAL ORGANIC MATTER COLLOIDS IN A SANDY AQUIFER **B2-2**
P. Le Cointe, B. Grambow, S. Huclier, G. Montavon, J. van der Lee, E. Giffaut, V. Schneider (France)
- 12:30 pm BREAK

Session 15 B2: Diffusion and Other Migration Processes

Chair: P. de Canniere, U. Berner

- 2:00 pm FUNDAMENTAL PROCESSES GOVERNING DIFFUSION AND RETENTION IN CLAYS: WHAT CAN BE LEARNED FROM FIRST-PRINCIPLES, MOLECULAR AND MESOSCOPIC SIMULATIONS? **B2-3**
B. Rotenberg (INVITED) (France)
- 2.45 pm CONTRIBUTION OF MICROTTEXTURAL OBSERVATIONS TO THE UNDERSTANDING OF DIFFUSION EXPERIMENTS IN CLAYEY BARRIERS **B2-4**
E.C. Gaucher, Th. Melkior, E. Ferrage, D. Coelho (France)
- 3:10 pm ELECTROLYTE DIFFUSION IN COMPACTED MONTMORILLONITE **B2-5**
M. Birgersson, O. Karnland (Sweden)

3:35 pm DIFFUSION OF WATER AND SOLUTES NEAR CLAY SURFACES: BRIDGING THE NANOPORE AND CONTINUUM SCALES **B2-6**
I.C. Bourg, G. Sposito (USA)

4:00 pm BREAK

Session 16 A5: Solid-Water Interface Reactions

Chair: P. Fenter, N. Rösch

4:20 pm INTERACTION OF PuO₂ THIN FILMS WITH WATER **A5-9**
A. Seibert, T. Gouder, F. Huber (Germany)

4:45 pm THE INFLUENCE OF CARBONATE COMPLEXATION ON ACTINIDE SORPTION ON CLAY MINERALS **A5-10**
M. Marques Fernandes, B. Baeyens, Th. Stumpf, R. Daehn, M.H. Bradbury (Switzerland, Germany)

5:10 pm IDENTIFICATION OF URANYL SURFACE COMPLEXES ON FERRIHYDRITE: ADVANCED EXAFS DATA ANALYSIS AND CD-MUSIC MODELING **A5-11**
A. Rossberg, K.-U. Ulrich, S. Weiss, S. Tsushima, T. Hiemstra, A.C. Scheinost (Germany, USA, Japan)

5:35 pm SORPTION OF CURIUM BY SILICA COLLOIDS: EFFECT OF HUMIC ACID **A5-12**
A.S. Kar, S. Kumar, B.S. Tomar, V.K. Manchanda (India)

6:00 pm END

7:00 pm CONFERENCE BANQUET

Friday (25. September)

Session 17 A1: Solubility and Dissolution

Chair: P. Toulhoat, V. Neck

- 8:30 am THE ROLE OF NON URANIUM CATIONS IN THE OXIDATIVE DISSOLUTION OF HIGH BURN-UP FUEL AND OF INTERFACIAL RADIOLYTIC PROCESSES IN THE HYDROGEN ACTION
K. Spahiu (INVITED) (Sweden) **A1-1**
- 9:15 am NEPTUNIUM DIOXIDE PRECIPITATION KINETICS IN AQUEOUS SYSTEMS
A.M. Johnsen, K.E. Roberts, S.G. Prussin (USA) **A1-2**
- 9:40 am DISCREPANCIES IN THORIUM OXIDE SOLUBILITY VALUES: A NEW DEFINITION BY ATOMS EXCHANGE AT SOLID/SOLUTION INTERFACE
J. Vandenborre, A. Abdelouas, B. Grambow (France) **A1-3**
- 10:05 am DISSOLUTION OF Np(V)-DOPED U(VI) SILICATE MINERALS
N.A. Wall, S.B. Clark (USA) **A1-4**
- 10:30 am BREAK

Session 18 International Research Programs

Chair: A. Campbell, W.H. Kim

- 10:50 am A DISCUSSION OF THE HIGH LEVEL RADIOACTIVE WASTE DISPOSAL IN CHINA
C.L. Liu, Z.Q. Pan (China) **I-1**
- 11:10 am NUCLEAR WASTE MANAGEMENT PROGRAM IN KOREA: CURRENT STATUS AND FUTURE
J.I. Yun (Korea) **I-2**
- 11:30 am RESEARCH IN THE FIELD OF NUCLEAR WASTE DISPOSAL IN RUSSIA IN THE LIGHT OF INCREASE OF NUCLEAR POWER PRODUCTION
S.N. Kalmykov, B.F. Myasoedov, E.V. Zakharova (Russia) **I-3**

11:50 am CURRENT DEVELOPMENT OF NUCLEAR HLW AND ILW WASTE DISPOSAL PROGRAMMES IN FRANCE **I-4**
S. Dewonck, P. Landais(France)

12:10 RECENT ACHIEVEMENTS IN THE SWEDISH NUCLEAR WASTE MANAGEMENT PROGRAMME **I-5**
K. Spahiu, P. Wikberg (Sweden)

12:30 pm

Sunday, 20 September, 2009

12:00 pm ⇒ Registration

6:00 pm ⇒ Social/Reception

6:45 pm ⇒ Opening Session

Monday, 21 September, 2009

8:15 am ⇒ Conference
Announcements

8:30 am–10:30 am ⇒ *Session 1:*
A5: Solid-Water Interface Reactions

10:50 am–12:30 pm ⇒ *Session 2:*
B4: Effects of Biological and
Organic Materials

2:00 pm–4:00 pm ⇒ *Session 3:*
C: Geochemical and Transport
Modelling

4:20 pm–6:00 pm ⇒ *Session 4:*
A4: Redox Reactions and Radiolysis
Effects

7:00 pm–10:00 pm ⇒ *Session 5:*
Poster Session I

Tuesday, 22 September, 2009

8:30 am–10:30 am ⇒ *Session 6:*
A3: Complexation With Inorganic
and Organic Ligands

10:50 am–12:30 pm ⇒ *Session 7:*
A2: Solid Solution and Secondary
Phase Formation

2:00 pm–4:00 pm ⇒ *Session 8:*
A6: Colloid Formation

4:20 pm–5:35 pm ⇒ *Session 9:*
A7: Experimental Methods

7:00 pm–10:00 pm ⇒ *Session 10:*
Poster Session II

Wednesday, 23 September, 2009

8:30 am– 10:55 am ⇒ *Session 11:*
Hanford Special Session

11:15 am– 12:30 pm ⇒ *Session 12:*
A3: Complexation With Inorganic &
Organic Ligands

12:30 pm ⇒ Free

Thursday, 24 September, 2009

8:30 am–10:30 am ⇒ *Session 13:*
A5: Solid-Water Interface Reactions

10:50 am–12:30 pm ⇒ *Session 14:*
B1 + B2 + B5: Migration Behaviour
of Radionuclides

2:00 pm–4:00 pm ⇒ *Session 15:*
B2: Diffusion and Other Migration
Processes

4:20 pm–6:00 pm ⇒ *Session 16:*
A5: Solid-Water Interface Reactions

7:00 pm ⇒ Conference Banquet

Friday, 25 September, 2009

8:30 am–10:30 am ⇒ *Session 17:*
A1: Solubility and Dissolution

10:30 am–12:30 pm ⇒ *Session 18:*
International Research Programs

12:30 pm ⇒ End