18th International Conference on
Chemistry and Migration Behaviour of Actinides
and Fission Products in the Geosphere

Migration 2023

Nantes - France

September 24 – 29, 2023

RADIONUCLIDE MIGRATION

Booklet

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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, MIGRATION ‘07 in Munich, MIGRATION ’09 in Kennewick, Washington, USA, MIGRATION 2011 in Beijing, China, MIGRATION 2013 in Brighton, UK, MIGRATION 2015 in Santa Fe, New Mexico, USA, MIGRATION 2017 in Barcelona, Spain and MIGRATION 2019 in Kyoto, Japan.

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'23 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
8) Computational chemistry

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
5) Safety assessment and repository concepts

D Application to Case Studies

E Special sessions:

CIGÉO and NORM

PROGRAMME

SUNDAY (24. SEPTEMBER)

15:00 **REGISTRATION**

17:00 **WELCOME**
B. Grambow, G. Montavon (France)
H. Geckeis (Germany)

OPENING SESSION:
EVOLUTION OF WASTE PROGRAMS AND IMPACT ON RESEARCH

Chair: B. Grambow and G. Montavon (France)

		ID
17:10	DEEP GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE: WHERE ARE WE AND WHERE ARE WE GOING TO? *F. Plas (INVITED) (France)*	**E-1**
17:50	MIGRATION OF ACTINIDES AND FISSION PRODUCTS – AN OVERVIEW TO PUT THE DIFFERENT ISSUES OF IMPORTANCE FOR THE POST-CLOSURE SAFETY OF GEOLOGICAL REPOSITORIES IN CONTEXT *P. Zuidema (INVITED) (Switzerland)*	**E-2**
18:30	MIGRATION SCIENCE, A KEY ASSET FOR THE ENERGY TRANSITION *C. Poinssot (INVITED) (France)*	**E-3**

19:10 **RECEPTION**

MONDAY (25. SEPTEMBER)

8:25 **CONFERENCE ANNOUNCEMENTS**

SESSION 1 A8: COMPUTATIONAL CHEMISTRY

Chair: V. Vallet (France) and D. Clark (USA)

		ID
8:30	COMPUTATIONAL CHEMISTRY APPROACHES TO PREDICTIVE MULTISCALE MODELLING OF MIGRATION PROCESSES: CURRENT CHALLENGES AND OPPORTUNITIES *A. G. Kalinichev (INVITED) (France)*	**A8-1**
9:15	ENABLING LONG TIME-SCALE QUANTUM MOLECULAR DYNAMICS SIMULATION FOR 5F-ELEMENTS *P. Yang, E. R. Batista, M. Cawkwell, C. Liu, R. Carlson, S. Wu, D. Perez (USA)*	**A8-2**
9:40	DENSITY FUNCTIONAL MODELING OF AM(III) HYDROXO COMPLEXES WITH Ca OR Mg COUNTER IONS. DO Mg STABILIZED SPECIES EXIST? *I. Chiorescu, S. Krüger (Germany)*	**A8-3**
10:05	COORDINATION AND THERMODYNAMIC PROPERTIES OF AQUEOUS PROTACTINIUM(V) BY COMPUTATIONAL CHEMISTRY TECHNIQUES *H. Oher, J. Delafoulhouze, E. Renault, V. Vallet, R. Maurice (France)*	**A8-4**
10:30	SORPTION OF Eu(III) ON C-S-H PHASES IN THE PRESENCE OF GLUCONATE: A MOLECULAR DYNAMICS STUDY *I. Androniuk, R. E. Guidone, M. Altmaier, X. Gaona (Germany)*	**A8-5**
10:55	**BREAK**	

SESSION 2 A5: SOLID-WATER INTERFACE REACTIONS

Chair: M. Marques Fernandes (Switzerland) and B. Powell (USA)

		ID
11:15	IMPACT OF FORMATE, CITRATE AND GLUCONATE ON THE UPTAKE OF An(III)/Ln(III) AND An(IV) BY CEMENT *R. E. Guidone, A. Tasi, I. Androniuk, X. Gaona, B. Lothenbach, M. Altmaier, H. Geckeis (Germany, Switzerland)*	**A5-1**
11:40	INTERFACIAL CHEMISTRY OF GIBBSITE UNDER CONDITIONS RELEVANT TO NUCLEAR WASTE *Z. Wang, H. Zhang, Y. Zhao, W. Cui, X. Zhang, S. Wang, E. D. Walter, M. J. Sassi, C. I. Pearce, S. B. Clark, K M. Rosso (USA)*	**A5-2**
12:05	RETENTION OF ^{226}RA BY ILLITE AND MONTMORILLONITE: AN ADSORPTION STUDY *F. Brandt, M. Klinkenberg, B. Baeyens, D. Bosbach, M. Marques Fernandes (Germany, Switzerland)*	**A5-3**
12:30	U(VI) RETENTION ON BENTONITE AND CEMENTITIOUS MATERIALS: EFFECT OF INCREASED IONIC STRENGTHS AND PRESENCE OF ORGANICS *K. Schmeide, T. Philipp, N. Huittinen, S. Shams, A. Azzam, J. Kretzschmar (Germany)*	**A5-4**
12:55	**BREAK**	

SESSION 3 B4: EFFECTS OF BIOLOGICAL AND ORGANIC MATERIALS

Chair: T. Stumpf (Germany) and K. Morris (UK)

		ID
14:30	MECHANISM OF URANIUM REDUCTION: THE ROLE OF PENTAVALENT SPECIES R. Bernier-Latmani, M. Molinas, Z. Pan, B. Bartova, T. LaGrange (INVITED) (Switzerland, China)	**B4-1**
15:15	IN SITU BIOMINERALISATION FOR GROUNDWATER RADIONUCLIDE REMEDIATION *C. Robinson, S. Shaw, J. R. Lloyd, J. Graham, J. Rothe, K. Dardenne, K. Morris (UK, Germany) (Uni Manchester)*	**B4-2**
15:40	PHYTOREMEDIATION OF SOIL FROM GERMAN NUCLEAR FACILITIES *T. Blenke, S. Dubchak, K. Grossmann, C. Geisler, C. Walther (Germany)*	**B4-3**
16:05	DISSOLVED ORGANIC MATTER IN BOOM CLAY AND ITS ROLE ON RADIONUCLIDE MIGRATION: WE HAVE COME A LONG WAY *D. Durce, J. Govaerts, N. Maes, S. Salah, L. Van Laer, S. Brassinnes (Belgium)*	**B4-4**
16:30	POTENTIAL IMPACT OF BIOGENIC CHELATORS ON THE MIGRATION OF ACTINIDES *G. J.-P. Deblonde, N. Wasserman, A. B. Kersting, K. Morrison, M. Zavarin (USA)*	**B4-5**
16:55	**BREAK**	

SESSION 4 C3: DEVELOPMENT AND APPLICATION OF MODELS: MACHINE LEARNING

Chair: V. Brendler (Germany) and D. Kulik (Switzerland)

		ID
17:15	NEXT GENERATION ENVIRONMENTAL MONITORING FRAMEWORK FOR NUCLEAR WASTE AND RADIOLOGICALLY CONTAMINATED SITES *H. Wainwright, C. Eddy-Dilek (USA)*	**C3-1**
17:40	DETERMINING 3D POROSITY MAP OF BUKOV CALCITE WITH A MULTIMODAL DEEP LEARNING APPROACH *J. Kuva, M. Jooshaki, E. Jolis, J. Sammaljärvi, M. Siitari-Kauppi, F. Jankovský, L. Mareda, P. Sardini (Finland, Czech Republic, France)*	**C3-2**
18:05	A CHEMISTRY-INFORMED HYBRID MACHINE LEARNING APPROACH TO PREDICT RADIONUCLIDE SORPTION TO MINERAL SURFACES E. CHANG, M. ZAVARIN, L. BEVERLY, H. WAINWRIGHT (USA)	**C3-3**
18:30	**END OF ORAL SESSIONS OF MONDAY**	

SESSION 5 POSTER SESSION I (19:00 – 22:00)

PA1 SOLUBILITY AND DISSOLUTION

ID

SEQUENTIAL EXTRACTION OF SIMULATED FUEL DEBRIS FOR EVALUATION OF THE CHEMICAL STABILITY **PA1-1**
A. Kirishima, H. Nakazumi, D. Akiyama (Japan)

SOLUBILITY BEHAVIOR AND CHARACTERIZATION OF NEODYMIUM(III) TRIHYDROXIDE SOLID PHASE **PA1-2**
R. Choi, J.-Y. Lee (Korea)

CHARACTERIZATION OF SYNTHETIC MAGNESIUM/CALCIUM URANYL SILICATE MINERALS AND THEIR SOLUBILITIES IN GROUNDWATER ENVIRONMENTS **PA1-3**
W. Cha, J. Park, H. R. Noh, E. C. Jung, S. H. Lim, H.-R. Cho, H.-K. Kim (Korea)

$(U,Ce)O_2$: A SUITABLE ANALOGUE TO STUDY THE ALTERATION OF $(U,Pu)O_2$ MOX FUEL IN ENVIRONMENTAL CONDITIONS **PA1-4**
T. Montaigne, S. Szenknect, V. Broudic, F. Miserque, F. Tocino, C. Martin, C. Jégou, N. Dacheux (France)

SOLUBILITY BEHAVIOR OF NEPTUNIUM(V) IN EXPECTED WIPP CONDITIONS **PA1-5**
U. Kaplan, C. Kutahyali Aslani, J. L. Knox, A. E. Navarrette, J. Beam, J.-F. Lucchini, D. T. Reed (USA)

PA2 SOLID SOLUTION AND SECONDARY PHASE FORMATION

ID

DECIPHERING THE DYNAMIC PROCESSES OF MINERAL PRECIPITATION INDUCED POROSITY CLOGGING. COMBINING MICROFLUIDIC EXPERIMENTS AND SOLUTE TRANSPORT MODELLING **PA2-1**
M. I. Lönartz, Y. Yang, G. Deissmann, D. Bosbach, J. Poonoosamy (Germany)

KINETICS OF ^{226}RA INCORPORATION INTO $(Ba,Ra)SO_4$ SOLID SOLUTIONS **PA2-2**
S. Rudin, P. M. Kowalski, M. Klinkenberg, T. Bornhake, D. Bosbach, F. Brandt (Germany)

FREEZING AND DEFROSTING OF IONIC AND MAGNETIC CONFIGURATIONS IN ZIRCONIUM MOLYBDATE FORMED IN NUCLEAR FUEL WASTE GLASSES **PA2-3**
M. Morishita, T. Miyatake, H. Yamamoto (Japan)

PA3 COMPLEXATION WITH INORGANIC AND ORGANIC LIGANDS

ID

NEW SPECIATION DIAGRAM OF THE PU(IV)-ACETATE SYSTEM TAKING INTO ACCOUNT POLYNUCLEAR SPECIES **PA3-1**
G. Chupin, C. Tamain, T. Dumas, P. Lorenzo Solari, P. Moisy, D. Guillaumont (France)

SOLUBILITY OF FERROUS IRON HYDROXIDE IN THE PRESENCE OF CITRATE: EFFECT OF IONIC STRENGTH **PA3-2**
T. Platte, J. Je-Hun Jang (USA)

THERMODYNAMIC AND STRUCTURAL STUDIES OF Am(III)-ISOSACCHARINATE COMPLEXATION UNDER ACIDIC TO ALKALINE CONDITIONS: AQUEOUS COMPLEXES TO COLLOIDAL PARTICLES **PA3-3**
H.-K. Kim, H. Cho, K. Jeong, U. H. Yoon, H.-R. Cho (Korea)

TRIBUTYL PHOSPHATE: COMPETITIVE ADSORPTION AND EFFECT ON RADIONUCLIDES RETENTION **PA3-4**
M. Assaf, E. Thory, P. Henocq, R. V. H. Dagnelie (France)

THERMODYNAMIC STUDY OF COMPLEXATION OF LANTHANIDE/ACTINIDE WITH CEMENT ADDITIVES BY ISOTHERMAL MICRO-TITRATION CALORYMETRY **PA3-5**
M. Acker, A. Wollenberg, S. Taut, T. Stumpf (Germany)

PA4 REDOX REACTIONS AND RADIOLYSIS EFFECTS

ID

PERRHENATE (ReO_4^-) REMOVAL FROM AQUEOUS SOLUTIONS BY MONO-, BI-, AND TRI-METALLIC IRON NANOPARTICLES: A COMPARATIVE STUDY **PA4-1**
I. Maamoun, K. Tokunaga, O. Falyouna, O. Eljamal, K. Tanaka (Japan)

REDOX-ACTIVE DONOR-ACCEPTOR CONJUGATED MICROPOROUS POLYMER FOR PHOTOCATALYTIC REDUCTION OF URANIUM(VI) **PA4-2**
F. Yu, Z. Zhang, Y. Liu (China)

CHLORIDE GREEN RUST AS SCAVENGER OF TECHNETIUM: IMMOBILIZATION AND SPECTROSCOPIC STUDIES **PA4-3**
N. Mayordomo, A. Rossberg, D. M. Rodríguez, D. Schild, A. C. Scheinost, V. Brendler, K. Müller (Germany, France)

Tc(VII) REDUCTIVE IMMOBILIZATION BY S(-II) PRE-SORBED ON ALUMINA **PA4-4**
S. Garcia-Gomez, C. Börner, J. Gimenez, I. Casas, J. Llorca, J. de Pablo, K. Müller, N. Mayordomo (Spain, Germany)

PORPHYRIN-BASED HYDROGEN-BONDED ORGANIC FRAMEWORK FOR VISIBLE LIGHT DRIVEN PHOTOCATALYTIC REMOVAL OF U(VI) FROM AQUEOUS SOLUTIONS **PA4-5**
P. Wu, X. Yin, Y. Zhao, F. Li, J. Liao, Y. Yang, N. Liu, T. Lan (China)

EXCITON DISSOCIATION AND TRANSFER BEHAVIOR AND SURFACE REACTION MECHANISM IN DONOR–ACCEPTOR ORGANIC SEMICONDUCTOR PHOTOCATALYTIC SEPARATION OF URANIUM **PA4-6**
Z. Dong, Z. Li, C. Meng, Z. Zhang, Y. Liu (China)

SELENIUM REACTIONS IN FERROUS AND SULFIDE-RICH ENVIRONMENTS: EFFECTS OF SULFIDE SPECIATION **PA4-7**
P. Clarence Francisco, T. Ishidera, H. Shiwaku, R. Kikuchi, D. Matsumura, Y. Tachi (Japan)

INSIGHTS INTO THE URANIUM ENRICHMENT MECHANISM ON MINERALS CONTAINING Fe(II) IN DEEP GEOLOGICAL REPOSITORIES **PA4-8**
X. Zhao, D. Pan, W. Wu (China)

PA5 SOLID-WATER INTERFACE REACTIONS

ID

SORPTION BEHAVIOR OF SELENITE ON CLAY MINERAL SURFACES IN THE PRESENCE OF AQUATIC FULVIC ACID **PA5-1**
H. Eun, S. Choi, J.-I. Yun (Korea)

APPLICATION OF METAL IONS DOPED HYDROXYAPATITE IN URANIUM ADSORPTION **PA5-2**
Y. Wang, L. Chen, Y. Liu (China)

SORPTION OF Eu(III) AND Cm(III) ON C-S-H PHASES IN PRESENCE OF EDTA AT INTERMEDIATE IONIC STRENGTH CONDITIONS **PA5-3**
A. K. Thumm, A. Skerencak-Frech, X. Gaona, M. Altmaier, H. Geckeis (Germany)

CONSTRUCTION AND APPLICATION OF AN ULTRAHIGHLY SELECTIVE PHOTOISOMERIC METAL-ORGANIC FRAMEWORKS MATERIAL FOR URANIUM EXTRACTION FROM SEAWATER **PA5-4**
P. Zhang, D. Pan, W. Wu (China)

TRIVALENT LANTHANIDES SORPTION ONTO ILLITE IN THE PRESENCE OF CARBONATE **PA5-5**
Y. Sugiura, T. Ishidera, N. Aoyagi, H. Mei, T. Saito, Y. Tachi (Japan)

URANIUM SORPTION ON OXYHYDROXIDE MINERALS BY SURFACE COMPLEXATION AND PRECIPITATION **PA5-6**
J. Wang, C. Liu (China)

Eu(III) AND Cm(III) COMPLEXATION BY NITRILOTRIACETIC ACID TO FURTHER EVALUATE ITS IMPACT ON THE RADIONUCLIDE RETENTION BY CEMENTITIOUS PHASES **PA5-7**
C. Sieber, J. Kretzschmar, B. Drobot, S. Tsushima, K. Schmeide, T. Stumpf (Germany)

MINERAL SPECIFIC SORPTION OF RADIUM ON CRYSTALLINE ROCK **PA5-8**
O. Fabritius, T. Sorokina, R. Dehqanzada, J. Sammaljärvi, A.-M. Jakobsson, T. Sojakka, M. Siitari-Kauppi (Finland, Sweden)

ANCHORING SELF-ASSEMBLY ANTIBACTERIAL AG NANOSHEETS ONTO THE MAGNETIC MICROSPHERES ENHANCED URANIUM IMMOBILIZATION **PA5-9**
M. Zhao, D. Pan, W. Wu (China)

FUNCTIONALIZED DIOXIN-LINKED COVALENT ORGANIC FRAMEWORKS FOR RAPID AND SELECTIVE EXTRACTION OF URANIUM **PA5-10**
Y. Xu, D. Pan, W. Wu (China)

Cs(I) AND Ba(II) SORPTION ON BIOTITE AT pH 5-9 AND 25, 40 AND 60°C **PA5-11**
P. Kumar, S. Holgersson (Sweden)

MICROMECHANISM OF ADSORPTION OF STRONTIUM AND CESIUM ON DIFFERENT EXPANSIVE CLAY MINERALS **PA5-12**
J. Hou, D. Pan, W. Wu (China)

ADSORPTION OF CESIUM ON MICACEOUS MINERALS WITH STRUCTURAL TRANSFORMATION AND THE IMPLICATION FOR DIFFUSION **PA5-13**
H. Wu, W. Wang, M. Kang, Y. Takahashi, Q. Fan (China, Japan)

ILLITIZATION UNDER HIGH TEMPERATURES AND ITS EFFECT ON CESIUM SORPTION **PA5-14**
S. Chang, M. Kong, D.H. Lee, J.S. Kim (Korea)

ANTI-BIOLOGICAL CONTAMINATION URANIUM ADSORBING CELLULOSE GEL **PA5-15**
Y. Jiang, Y. Zhang, Z. Li, G. He, Z. Zhang, Y. Liu (China)

RETENTION MECHANISMS OF SELENIUM IN DEEP SUBSURFACE SEDIMENTARY FORMATIONS IN HORONOBE AREA, HOKKAIDO, JAPAN **PA5-16**
S. Dei, Y. Tachi, Y. Amano, P. C. M. Francisco, Y. Sugiura, Y. Takahashi (Japan)

PA6 COLLOID FORMATION

ID

FORMATION OF STABLE U(VI) COLLOIDAL PARTICLES IN RELEVANT ENVIRONMENTAL CONDITIONS **PA6-1**
H. Barbier, S. Szenknect, D. Rebiscoul (France)

STABILITY OF EUROPIUM(III)/THORIUM(IV)-SILICATE COLLOIDS: EFFECT OF SI CONTENT, pH, ELECTROLYTE AND FULVIC ACID **PA6-2**
D. Zhang, Q. Jin, Z. Chen, Z. Guo (China)

THE STABILITY AND INTERACTION OF COLLOIDS AND THEIR EFFECTS ON RADIONUCLIDE TRANSPORT REGARDING TO HLW DISPOSAL IN GRANITIC FORMATION **PA6-3**
Z. Guo, P. Gao, Z. Chen, Q. Jin, W. Wu (China)

PA7 EXPERIMENTAL METHODS

ID

AN "ON-OFF" RATIOMETRIC FLUORESCENT SENSOR FOR UO_2^{2+} BASED ON Ag^+-MODIFIED GOLD NANOCLUSTERS HYBRID **PA7-1**
X. Cao, Z. Zhang, Y. Liu (China)

TRACING AND QUANTIFICATION OF ^{226}Ra IN TAILINGS BY SPECTROSCOPIC AUTORADIOGRAPHY **PA7-2**
H. Lefeuvre, S. Billon, M. Descostes, J. Donnard, S. Duval, P. Sardini (France)

DEVELOPMENT OF ANALYTICAL PROTOCOL FOR DIFFICULT TO MEASURE RADIONUCLIDES IN METALLIC MATRIX; EXAMPLE OF ZR-93 IN STAINLESS STEEL AND INCONEL METALS **PA7-3**
T. Suzuki-Muresan, M. Mokili, A. Abdelouas, N. Bessaguet, P. Cassette, S. Happel, G. Montavon (France, Bulgaria)

A RAPID DETERMINATION OF SELENIUM IN TEA SAMPLES USING ANION CHROMATOGRAPHIC COLUMN COMBINED WITH AUTOMATIC SYSTEM SEPARATION AND HR-ICP-MS MEASUREMENT **PA7-4**
Y. Chen, N. Guo, K. Shi (China)

PA8 COMPUTATIONAL CHEMISTRY

ID

AN ATOMIC SCALE COMPUTATIONAL APPROACH TO UNDERSTANDING REDOX SPECIATION OF KEY ACTINIDES ON IRON BEARING MINERALS **PA8-1**
C. Hatton, N. Kaltsoyannis, L. Natrajan, S. Shaw (UK)

DENSITY FUNCTIONAL THEORY STUDY OF THE CRYSTAL STRUCTURE AND INFRARED SPECTRUM OF ETTRINGITE **PA8-2**
F. Colmenero, O. Almendros, A. M. Fernández, T. Missana (France, Spain)

ACTINIDE(IV) INTERACTIONS WITH CALCIUM SILICATE HYDRATE: SORBED SPECIES AND COMPARISON OF SORPTION MODES BY MEANS OF DENSITY FUNCTIONAL CALCULATIONS **PA8-3**
I. Chiorescu, A. Kremleva, S. Krüge (Germany)

EXPLORING THE COMPLEXATION OF CURIUM(III) AND EUROPIUM(III) WITH AQUEOUS PHOSPHATES: A COMBINED EXPERIMENTAL AND AB INITIO STUDY **PA8-4**
F. Réal, N. Huittinen, I. Jessat, V. Vallet, N. Jordan (France, Germany)

PB2 DIFFUSION AND OTHER MIGRATION PROCESSES

ID

IONIC DIFFUSIVE TRANSPORT THROUGH PARTIALLY-WATER SATURATED CEMENT-BASED MATERIALS **PB2-1**
S. Savoye, S. Lefevre, N. Macé, J.-C. Robinet (France)

EFFECTS OF BIOTITE ON DIFFUSION AND SORPTION OF CATIONS IN CRYSTALLINE ROCKS BY THROUGH-DIFFUSION AND LASER-ABLATION ICP-MS EXPERIMENTS **PB2-2**
Y. Fukatsu, Q. Hu, Y. Tachi (Japan, USA)

DIFFUSION AND RETENTION OF DIVALENT TRANSITION METAL TRACERS IN COMPACTED ILLITE CONVERTED TO DIFFERENT CATIONIC FORMS **PB2-3**
D. Zerva, M. A. Glaus, S. Churakov (Switzerland)

RELEVANCE OF UPWARDS MIGRATION OF RADIONUCLIDES IN SOIL IN THE CONTEXT OF NUCLEAR WASTE MANAGEMENT **PB2-4**
A. Kogiomtzidis, V. Hormann, C. Walther (Germany)

ZINC(II) TRANSPORT IN COMPACT ILLITE IN THE PRESENCE OF ORGANIC LIGANDS **PB2-5**
X. Wei, M. A. Glaus, L. R. Van Loon, M. Marques Fernandes, B. Ma (Switzerland, China)

DIFFUSION AND SORPTION OF HTO AND Eu-152 IN CRYSTALLINE ROCK WITH AND WITHOUT BENTONITE COLLOIDS **PB2-6**
N. Pakkanen, L. Biez, J. Arkko, E. Jolis, J. Kuva, P. Sardini, A. Mazurier, J. Sammaljärvi, M. Siitari-Kauppi (Finland, France)

METAL ION DIFFUSION THROUGH METAKAOLIN-BASED GEOPOLYMER **PB2-7**
A. C. Yildirim, K. Toda, T. Saito (Japan)

A SENSITIVE METHOD TO MEASURE GEOMETRY FACTORS FOR DIFFUSION ON SMALL SAMPLES OF CLAY ROCK **PB2-8**
M. A. Glaus, D. Zerva, L. R. Van Loon, R. A. J. Wüst (Switzerland)

EFFECTS OF ALTERATION BY LEACHING ON MIGRATION OF CESIUM IN HARDENED CEMENT PASTE **PB2-9**
N. Watanabe, K. Watanabe, K. Matsumoto, S. Uematsu, T. Kozaki, Y. Morinaga, D. Minato, T. Nagaoka (Japan)

PB3 COLLOID MIGRATION

ID

BENTONITE COLLOIDS MEDIATED Eu(III) MIGRATION IN HOMOGENEOUS AND HETEROGENEOUS MEDIA OF BEISHAN GRANITE AND FRACTURE-FILLING MATERIALS **PB3-1**
Y. Chen, C. Liu, N. Guo (China)

COUPLING MECHANISM OF Eu(III) TRANSPORT IMPACTED BY COMPOSITE COLLOIDS OF BENTONITE AND ORGANIC MATTER **PB3-2**
Z. Xu, D. Pan, W. Wu (China)

PB4 EFFECTS OF BIOLOGICAL AND ORGANIC MATERIALS

ID

INTERACTION OF TECHNETIUM WITH METABOLITES, MICROORGANISMS AND AT THE MINERAL-WATER INTERFACE: RADIOECOLOGICAL CONSIDERATIONS **PB4-1**
N. Mayordomo, I. Cardaio, A. Bureika, C. Börner, K. Müller (Germany)

ACCUMULATION OF ACTINIDES(III, VI) IN THE FILAMENTOUS FUNGUS *PODOSPORA ANSERINA* **PB4-2**
M. Maloubier, C. Le Naour, Y. Pei, G. Creff, A. Jeanson, C.Den Auwer, F. Chapeland-Leclerc, G. Ruprich-Robert, E. Cabet (France)

RIGIDITY AND FLEXIBILITY: UNRAVELING THE ROLE OF FULVIC ACID IN URANYL SORPTION ON GRAPHENE OXIDE USING MOLECULAR DYNAMICS SIMULATIONS **PB4-3**
T. Lan, P. Wu, X. Yin, Y. Zhao, J. Liao, D. Wang, N. Liu (China)

THE MECHANISM OF URANIUM(VI) BIOMINERALIZATION IN THE GROWTH OF *BACILLUS* SP. DWC-2 **PB4-4**
Y. Guo, H. Tu, F. Li, Y. Yang, J. Yang, T. Lan, N. Liu, J. Liao (China)

THE BEHAVIOR AND MECHANISM OF URANIUM BIOREDUCTION INDUCED BY A NATURAL BACILLUS THURINGIENSIS **PB4-5**
S. Chen, J. Gong, Y. Guo, H. Li, F. Li, T. Lan, Y. Yang, J. Liao, N. Liu (China)

BIOMIMETIC PHOTOCATALYTIC SYSTEMS DESIGNED BY SPATIALLY SEPARATED COCATALYSTS ON Z-SCHEME HETEROJUNCTION WITH IDENTIFIED CHARGE-TRANSFER PROCESSES FOR BOOSTING REMOVAL OF U(VI) **PB4-6**
Y. Liu, Z. Dong, Z. Li, X. Cao, Z. Zhang (China)

ORGANICALLY BOUND TRITIUM SPECIATION IN ENVIRONMENTAL MATRICES BY ISOTOPIC EXCHANGE **PB4-7**
A.-L. Nivesse, N. Baglan Nicolas, G. Montavon, O. Péron (France)

PB5 FIELD AND LARGE-SCALE EXPERIMENTS

ID

MIGRATION OF ^{60}Co, ^{133}Ba, ^{137}Cs, AND ^{152}Eu FROM CEMENTITIOUS WASTEFORMS IN FIELD LYSIMETER EXPERIMENTS **PB5-1**
R. Williams, D. I. Kaplan, T. A. DeVol, B. J. Erdmann, B. A. Powell (USA)

MODELING A RADIONUCLIDE TRANSPORT EXPERIMENT IN GRANITIC ROCK MATRIX AT GRIMSEL. THE ROLE OF ADVECTION **PB5-2**
J. M. Soler, D. Jurado, M. W. Saaltink, L. Martínez, J. J. Hidalgo, G. W. Lanyon, A. J. Martin (Spain, UK, Switzerland)

CHARACTERISTICS OF GRANITIC AQUIFER COLLOIDS IN THE KURT GROUNDWATER SYSTEM **PB5-3**
J. Ha, J.-Y. Lee (Korea)

THE HETEROGENEITY OF THE SANDY FACIES OF OPALINUS CLAY ACROSS SCALES, FROM SEISMIC SURVEYS TO RADIONUCLIDE DIFFUSION - AN IN-SITU TEST IN THE SWISS ROCK LABORATORY MONT TERRI **PB5-4**
F. Heberling, H. Albers, T. Beilecke, G. Deissmann, C. Fischer, M. Furche, H. Geckeis, E.-M. Hoyer, C. Joseph, A. Liebscher, L. Van Loon, S. Lüth, B. Ma, V. Metz, K. Müller, U. Nowak, F. Quinto, D. Rebscher, W. Rühaak, F. Schulte, F. Steegborn, T. Tietz (Germany, Switzerland)

STRONTIUM BEHAVIOUR IN RADIOACTIVELY CONTAMINATED LAND – UNDERPINNING OPTIONS FOR IN-SITU DISPOSAL **PB5-5**
J. Blagden, S. Shaw, V. Coker, J. Graham, K. Morris (UK)

PB6 NATURAL ANALOGUES

ID

IDENTIFICATION ON THE ORIGIN AND FATE OF DISSOLVED U IN BOEUN AQUIFER, BASED ON C, O, Fe, S, Sr AND U-SERIES ISOTOPIC SIGNATURES **PB6-1**
Y. Ju, M. H. Baik, S. Y. Lee, D. Kaown, K.-K. Lee, D. Shin, J. H. Ryu (Korea)

GEOCHEMICAL BEHAVIORS OF URANIUM IN A URANIUM DEPOSIT OF THE OGCHEON METAMORPHIC BELT, KOREA **PB6-2**
M. H. Baik, Y. Ju, J. H. Ryu, J. O. Jeong (Korea)

PC1 DATA SELECTION AND EVALUATION

ID

THE NEA THERMOCHEMICAL DATABASE (TDB) PROJECT: HIGH QUALITY DATA, ACCESSIBILITY AND CAPACITY BUILDING **PC1-1**
J. S. Martinez, A. Mercier (France)

DEVELOPMENT OF A DATABASE FOR RADIONUCLIDE SORPTION ON CLAY AND CEMENT SYSTEMS IN SUPPORT TO RADIOACTIVE WASTE MANAGEMENT **PC1-2**
D. García, M. López-García, D. Pérez, I. Canals, A. Nardi, L. Duro, S. Brassinnes (Spain, Belgium)

THERMODYNAMIC MODELS DATABASE: A TOOL FOR UNDERSTANDING RADIONUCLIDE SORPTION MECHANISMS ON CLAY AND CEMENT SYSTEMS **PC1-3**
I. Canals, M. López-García, D. Pérez, A. Nardi, L. Duro, D. García, S. Brassinnes (Spain, Belgium)

A THERMODYNAMIC DATABASE FOR THE SOLUTION CHEMISTRY AND SOLUBILITY OF EUROPIUM(III) INORGANIC SPECIES: RECENT DEVELOPMENTS **PC1-4**
N. Jordan, T. Thoenen, S. Starke, K. Spahiu, V. Brendler (Germany, Switzerland, Sweden)

THERMOCHIMIE: A THERMODYNAMIC DATABASE USED IN RADIOACTIVE WASTE DISPOSAL EVALUATION **PC1-5**
B. Madé, W. Bower, S. Brassinnes (France, UK, Belgium)

PC2 COUPLING CHEMISTRY AND TRANSPORT

ID

INTERPRETATION OF DIFFUSION EXPERIMENTS WITH A NUMERICAL REACTIVE TRANSPORT APPROACH **PC2-1**
C. Tournassat, C. I. Steefel, P. M. Fox, R. M. Tinnacher (USA, France)

MODEL INTERPRETATION OF INTERACTION BETWEEN GLASS AND ORDINARY PORTLAND CEMENT IN AN INTEGRATED GLASS DISSOLUTION EXPERIMENT **PC2-2**
S. Liu, K. Ferrand, J. Goethals, D. Jacques, K. Lemmens (Belgium, France)

REACTIVE TRANSPORT MODELLING OF TCO4- DIFFUSION IN OPALINUS CLAY WITH PFLOTRAN **PC2-3**
P. Chen, L. R. Van Loon, S. Koch, P. Alt-Epping, T. Reich, S. Churakov (Switzerland, Germany)

PC3 DEVELOPMENT AND APPLICATION OF MODELS

ID

COMPARISON OF THE CAPACITY OF TWO ADSORPTION MODELS TO DESCRIBE Sr^{2+} AND Cs^{+} BEHAVIOR ON SOILS SURROUNDING NUCLEAR FACILITIES **PC3-1**
S. Savoye, C. Latrille, M. Krimissa, M. Lorthioy (France)

PORE-SCALE MODELLING OF SOLUTE TRANSPORT IN PARTIALLY AND FULLY SATURATED POROUS MEDIA **PC3-2**
Y. Yang, R. A. Patel, G. Deissmann, J. Poonoosamy, D. Bosbach (Germany)

PC4 MODEL VALIDATION

ID

GEOCHEMISTRY AND MACHINE LEARNING BENCHMARK WITHIN EURAD JOINT PROJECT **PC4-1**
N.I. Prasianakis, E. Laloy, D. Jacques, J.C.L. Meeussen, C. Tournassat, G.D. Miron, D. A. Kulik, A. Idiart, E. Demirer, B. Cochepin, M. Leconte, M. Savino, M. Marques Fernandes, J. Samper II, M. De Lucia, C. Yang, S. V. Churakov, V. Montoya, J. Samper, O. Kolditz, F. Claret (Switzerland, Belgium, The Netherlands, France, Spain, Germany, USA)

PD APPLICATION TO CASE STUDIES

ID

A CRITICAL ANALYSIS OF THE RADIOECOLOGICAL MODEL USED IN THE GERMAN CALCULATION BASIS FOR THE ESTIMATION OF RADIATION DOSES DUE TO THE STORAGE OF HIGHLY ACTIVE NUCLEAR WASTE **PD-1**
V. Hormann, C. Walther (Germany)

TRANSPORT OF RADIOACTIVE WASTE ALONG THE SELLAFIELD SHORELINE: CLIMATE CHANGE IMPACT AND MITIGATION STRATEGIES THROUGH NATURE-BASED SOLUTIONS **PD-2**
L. Bacon-Hall, N. Leonardi, A. Plater, L. Abrahamsen-Mills, S. Kwong (UK)

PRELIMINARY LONG-TERM HYDROGEOCHEMICAL EVOLUTION STUDY CASE IN TAIWAN **PD-3**
Y.-H. Huang, P.-H. Kuo, P.-Y. Chuang, C.-C. Ke, P. Trinchero (Taiwan, Spain)

MICROBIAL IMPACT ON MINERALOGICAL TRAPPING OF URANIUM IN DEEP ANOXIC AQUIFERS: CASE STUDIES FOR ÄSPÖ HARD ROCK LABORATORY AND FORSMARK SITE, SWEDEN **PD-4**
I. Pidchenko, J. Christensen, M. Kutzschbach, K. Ignatyev, I. Puigdomenech, L. Krall, T. Rasbury, H. Drake (Sweden, USA, Germany, UK) (245)

PE CIGÉO AND NORM

ID

EFFECT OF CITRIC ACID AND MALIC ACID ON THE URANIUM UPTAKE INTO *BRASSICA NAPUS* PLANTS IN HYDROPONIC CULTURE **PE-1**
W. A. John, J. Jessat, R. Steudtner, R. Hübner, S. Sachs (Germany)

GEOCHEMICAL BEHAVIOR OF RADIUM IN A URANIUM MILL TAILINGS POND OF THE NINGYO-TOGE MINE AREA **PE-2**
K. Tanaka, Y. Kurihara, J. Tomita, I. Maamoun, S. Yamasaki, K. Tokunaga, K. Fukuyama, N. Kozai (Japan)

CONFERENCE ANNOUNCEMENT

9TH CLAY CONFERENCE, HANNOVER, GERMANY, 25 – 28 NOVEMBER 2024, SAVE THE DATE
A. Göbel (BGE) and J. Lippmann-Pipke (BGR)

TUESDAY (26. SEPTEMBER)

8:25 **CONFERENCE ANNOUNCEMENTS**

SESSION 6 C2: COUPLING CHEMISTRY AND TRANSPORT

Chair: P. De Cannière (Belgium) and J. Soler (Spain)

		ID
8:30	TOWARDS A PROCESS-BASED MODEL DESCRIBING TRANSPORT-INDUCED CO-PRECIPITATION AND RADIONUCLIDE RETENTION. LAB ON CHIP EXPERIMENTS AND REACTIVE TRANSPORT MODELLING DIAGNOSTICS *J. Poonoosamy, E. Curti, A. Obaeid, N. I. Prasianakis, G. Deissmann, S. Churakov, D. Bosbach (INVITED) (Germany, Switzerland)*	**C2-1**
9:15	CLAYSORDIF: A NEW MODEL FOR RADIONUCLIDE SORPTION AND DIFFUSION IN ARGILLACEOUS MEDIA (GEMS IMPLEMENTATION AND VERIFICATION AGAINST PHREEQC RESULTS AND EXPERIMENTAL DATA) *D. A. Kulik, M. A. Glaus, T. Gimmi, L. R. Van Loon, R. Wüst (Switzerland)*	**C2-2**
9:50	GLASS ALTERATION MODELISATION USING GRAAL2 MODEL *M. Delcroix, P. Frugier, C. Noiriel (France)*	**C2-3**
10:10	REACTIVE TRANSPORT MODELS OF LABORATORY CORROSION TESTS AT THE IRON/BENTONITE INTERFACE: FB4, FB5 AND FEMO TESTS *J. Samper, A. Mon, L. Montenegro, E. Torres, M. J. Turrero, J. Cuevas (Spain)*	**C2-4**
10:35	**BREAK**	

SESSION 7 A7: EXPERIMENTAL METHODS

Chair: J.- I. Yun (Korea) and M. Schmidt (Germany)

		ID
10:55	RADIONUCLIDE DISTRIBUTIONS IN (TIME-RESOLVED) NATURAL ARCHIVES DETERMINED BY AMS *K. Hain, S. Adler, A. Cundy, T. Faestermann, K. Fenclová, K. Fifield, F. Gülce, G. Korschinek, M. Martschini, S. Pavetich, J. Pitters, G. Rugel, P. Steier, S. Tims, S. Turner, J. Wolf, J. Zinke (Austria, UK, Germany, Czech Republic, Australia)*	**A7-1**
11:20	ON THE TRACE (LEVEL) OF A HIGH-LEVEL NUCLEAR WASTE DISPOSAL - METHOD DEVELOPMENT FOR MIGRATION EXPERIMENTS USING HPLC, ICP-MS AND LA-ICP-MS *A. Haben, K. Brix, R. Kautenburger (Germany)*	**A7-2**
11:45	MULTI-TECHNIQUE ANALYSIS OF THE BEHAVIOR OF URANIUM IN NATURAL SOIL *S. Bayle, P. Crancon, P.-L. Solari, C. Den Auwer (France)*	**A7-3**

12:10 INVESTIGATING GEOCHEMICAL INTERACTIONS OF PLUTONIUM WITH OPALINUS CLAY AND HARDENED CEMENT PASTE VIA TOF-SIMS AND RL-SNMS **A7-4**
F. Berg, M. Breckheimer, T. Reich (Germany)

12:35 **BREAK**

SESSION 8 A1: SOLUBILITY AND DISSOLUTION

Chair: S. Szenknect (France) and D. Bosbach (Germany)

		ID
14:00	SAFETY AND SCIENCE: THE FRAGILE CONNECTION – PART II *R. C. Ewing, B. Grambow (INVITED) (USA, France)*	**A1-1**
14:45	SPENT NUCLEAR FUEL IN CLOSED GLASS AMPOULES: RADIOLYSIS AND RADIONUCLIDE RELEASE AFTER ONE AND FIVE YEARS *L. Z. Evins, C. Askeljung, K. Johnson, A. Puranen, A. Barreiro Fidalgo, O. Roth, K. Spahiu (Sweden)*	**A1-2**
15:10	EFFECT OF TEMPERATURE ON THE OXIDATIVE DISSOLUTION OF UO_2 DOPED WITH A RADIOACTIVE ALPHA EMITTER IN SYNTHETIC CALLOVIAN-OXFORDIAN GROUNDWATER IN THE PRESENCE OF IRON *V. Broudic, C. Marques, G. Jouan, M. Autillo, S. Miro, S. Peuget, F. Tocino, C. Martin, L. De Windt, C. Jegou (France)*	**A1-3**
15:35	SOLUBILITY AND STRUCTURAL CHARACTERIZATION OF Zr(IV) HYDROUS OXIDES *C. Kiefer, T. Suzuki-Muresan, X. Gaona, D. Schild, O. Dieste Blanco, T. Kobayashi, D. Grekov, M. Calatayud, B. Grambow, H. Geckeis (France, Germany, Japan)*	**A1-4**
16:00	GEOLOGICAL DISPOSAL OF CARBON-14: FROM SOURCE TO SINK *W. Bower, A. Yorkshire, D. Lever, A. Hoch, S. Swanton, B. Swift, L. Payne, A. Cooke, S. Vines, S. Norris (UK)*	**A1-5**

16:25 **BREAK**

SESSION 9 D: APPLICATION TO CASE STUDIES

Chair: B. Grambow (France) and T. Sasaki (Japan)

		ID
16:45	RADIOCAESIUM MIGRATION WITHIN A FUKUSHIMA FOREST ECOSYSTEM AND THE ROLE OF BIOMONITORING *T. Dohi, T. Niizato, Y. Sasaki, K. Iijima (Japan)*	**D-1**

17:10	APPLICATION OF ACCELERATOR MASS SPECTROMETRY TO MEASURE RATIOS OF PLUTONIUM ISOTOPES AND EVALUATE AMERICIUM DISTRIBUTIONS AT THE LITTLE FOREST LEGACY SITE, AUSTRALIA *T. E. Payne, D. P. Child, T. Cunynghame, J. J. Harrison, M. A.C. Hotchkis, M. P. Johansen, L. Mokhber Shahin, A Silitonga, S. Thiruvoth (Australia)*	**D-2**
17:35	RENEWED LEAKAGE FROM SELLAFIELD'S MAGNOX SWARF STORAGE SILOS: OBSERVATIONS & OPPORTUNITIES FOR IMPROVED UNDERSTANDING OF RADIONUCLIDE MIGRATION *J. Graham, J. Heneghan (UK)*	**D-3**
18:00	APPROACH OF HANDLING THE SORPTION AND DIFFUSION HETEROGENEITY ACROSS THE OPALINUS CLAY AND ADJACENT CONFINING UNITS IN THE SAFETY CASE FOR THE SWISS DEEP GEOLOGICAL REPOSITORY *R. A. J. Wüst, L. R. Van Loon, M. A. Glaus, D. A. Kulik, M. Marques Fernandes, X. Li (Switzerland)*	**D-4**
18:25	**END OF ORAL SESSIONS OF TUESDAY**	

SESSION 10 POSTER SESSION II (19:00 – 22:00)

PA1 SOLUBILITY AND DISSOLUTION

	ID
TECHNETIUM DIOXIDE SOLUBILITY AT ELEVATED TEMPERATURES *M. Riss, S. L. Estes, B. A. Powell (USA)*	**PA1-6**
EVALUATING THE CHEMICAL DURABILITY OF IODINE BEARING GLASS SYNTHESIZED AT HIGH PRESSURE: VAPOR HYDRATION AND AQUEOUS ALTERATION STUDY *K. Roy, T. Suzuki-Muresan, V. Bosse, L. Campayo, Y. Morizet, A. Abdelouas (France)*	**PA1-7**
SOLUTION AND SOLID-LIQUID-EQUILIBRIUM PROPERTIES OF RADIONUCLIDE-NITRATE AQUEOUS SYSTEMS: EXPERIMENTS AND SIT PARAMETERIZATION *A. Lassin, P. F. dos Santos, X. Gaona, M. Altmaier, B. Madé (France, Germany)*	**PA1-8**
DISSOLUTION AND AGING OF METAL MONOURANATES: SIMULATED DEBRIS OF FUKUSHIMA DAIICHI NUCLEAR POWER STATION *T. Sasaki, Y. Kato, R. Tonna, T. Kobayashi, Y. Okamoto (Japan)*	**PA1-9**
STABILITY & PHYSICO-CHEMICAL CHARACTERISATION OF A RECONDITIONED WASTE FORM RELECANT TO RADIOACTIVE WASTES *G. F. Vettese, T. Vierinen, T. Oey, S. Lanninmaki, T. Vehmas, M. Nieminen, J. Laatikainen-Luntama, M. Leivo, E. Myllykylä, G. T. W. Law (Finland)*	**PA1-10**

PA2 SOLID SOLUTION AND SECONDARY PHASE FORMATION

ID

SOLUBILITY EVALUATION OF THE COPRECIPITATE URANIUM AND PLUTONIUM OXIDE UNDER HYPERALKALINE AND REDUCING CONDITIONS IN THE CONTEXT OF DEEP DISPOSAL OF ILW RADIOACTIVE WASTES **PA2-4**
M. Le Meur, T. Suzuki-Muresan, S. Ribet, C. Landesman, T. Verron, A. Piscitelli, B. Grambow (France)

SOLUBILITY AND SOLID PHASE FORMATION IN THE Nd_2O_3-$EuCl_3$-$NdCl_3$-NaCl-H_2O(L) SYSTEM **PA2-5**
R. M. Rao Dumpala, F. Heberling, X. Gaona, K. Garbev, D. Schild, M. Altmaier, H. Geckeis (Germany)

STRUCTURE AND PROPERTIES OF CRYSTALLINE CERAMIC PHASES CONTAINING ACTINIDES – FROM BULK TO THE MOLECULAR LEVEL **PA2-6**
N. Huittinen, L. Braga Ferreira dos Santos, S. E. Gilson, G. L. Murphy, S. Richter, K. Popa, O. Valu, V. Svitlyk, C. Hennig (Germany)

PA3 COMPLEXATION WITH INORGANIC AND ORGANIC LIGANDS

ID

INVESTIGATION OF ACTINIDE SPECIATION AND COMPLEXATION WITH SMALL ORGANIC LIGANDS USING CE-ICP-MS **PA3-6**
T. Reich, T. Kutyma, J. Lohmann, J. Stietz (Germany)

INVESTIGATION OF THE CARBONATE COMPLEXATION OF ACTINIDES AND THE INFLUENCE OF ALKALI CATIONS USING CE-ICP-MS **PA3-7**
J. Lohmann, T. Reich (Germany)

COMPLEXATION OF Ni(II) WITH CITRATE IN CEMENTITIOUS SYSTEMS: THERMODYNAMIC DESCRIPTION **PA3-8**
O. Almendros-Ginestà, S. Duckworth, T. Missana, M. Altmaier, X. Gaona (Spain, Germany)

COMPLEXATION OF NEPTUNIUM(V) WITH AQUEOUS PHOSPHATE USING A DUAL EXPERIMENTAL AND QUANTUM CHEMICAL APPROACH **PA3-9**
E. Miladi, F. Real, V. Vallet, N. Jordan, N. Huittinen (France, Germany)

LUMINESCENE SPECTROSCOPIC INVESTIGATIONS OF U(VI) COMPLEXATION WITH AQUEOUS SILICATES AT (HYPER)ALKALINE CONDITIONS **PA3-10**
C. Shang, H. Oher, S. Duckworth, R. Polly, A. Skerencak-Frech, M. Altmaier, X. Gaona (Germany, France)

SOLUBILITY OF Tc(IV) IN THE PRESENCE OF ISOSACCHARINIC ACID: THERMODYNAMIC DESCRIPTION **PA3-11**
K. Kim, S. Duckworth, W. Um, M. Altmaier, X. Gaona (Korea, Germany)

PA4 REDOX REACTIONS AND RADIOLYSIS EFFECTS

ID

DESIGN AND SYNTHESIS OF NOVEL D/A BULK HETEROJUNCTION ORGANIC CONJUGATED FILM MATERIALS AND PHOTOCATALYTIC REDUCTION FOR REMOVAL OF IONS **PA4-9**
Z. Li (China)

ROLE OF Fe-PHASES ON SELENITE MIGRATION IN BENTONITE: UP-SCALING FROM DISPERSED TO COMPACTED SYSTEM **PA4-10**
U. Alonso, M. García-Gutiérrez, T. Missana (Spain)

INFLUENCE OF IRON OXIDE NANOPARTICLE CRYSTALLITE SIZE ON THE SORPTION AND REDUCTION OF PLUTONIUM **PA4-11**
F. E. Zengotita, M. R. Vejar, A. E. Hixon (USA)

PLUTONIUM REDOX CHEMISTRY IN THE PRESENCE OF CITRATE **PA4-12**
M. B. Comins, A. E. Hixon, J. Beam, J.-F. Lucchini (USA)

REDOX BEHAVIOUR AND SPECIATION OF PLUTONIUM IN THE PRESENCE OF ALUMINIUM-DOPED IRON OXIDE MINERAL SURFACES **PA4-13**
M. R. Vejar, F. E. Zengotita, S. E. Bone, D. Sokaras, S. Weiß, S. Shams Aldin Azzam, N. M. Huittinen, E. F. Bazarkina, K. O. Kvashnina, A. E. Hixon (USA, Germany, France)

THE REDOX BEHAVIOR OF URANIUM AND SELENIUM UNDER RADWASTE REPOSITORY CONDITION **PA4-14**
M. Kang, Y. Kang, W. Jin, J. She, Q. Lin, J. Wang (China)

SELENITE SORPTION STUDIES ONTO Fe(II) - AND Fe(III) - NONTRONITES **PA4-15**
F. J. León Vicente, A. M. Fernández, T. Missana (Spain)

IS THERE A ROLE FOR Pu(III) IN PREDICTING THE SUBSURFACE MIGRATION OF PLUTONIUM? **PA4-16**
D. T. Reed (USA)

PA5 SOLID-WATER INTERFACE REACTIONS

ID

DETERMINATION OF URANIUM(VI) SPECIATION DURING SORPTION TO GIBBSITE USING PARALLEL FACTOR ANALYSIS ON EXCITATION EMISSION MATRICES **PA5-17**
L. Lopez-Odriozola, S. Shaw, L. Abrahamsen-Mills, L. Natrajan (UK)

THE COMBINED EFFECT OF ISA- AND Ca-CONCENTRATION ON Pu-SORPTION TO A CEM III/C-BASED MORTAR FOR IMMOBILIZATION OF NUCLEAR WASTE **PA5-18**
K. Wouters, E. Coppens, B. de Blochouse, D. Durce (Belgium)

THE EFFECT OF CELLULOSE DEGRADATION PRODUCTS ON THE SORPTION AND DIFFUSION OF NICKEL IN DEGRADED HARDENED CEMENT PASTE **PA5-19**
D. Durce, N. Bleyen, K. Wouters, N. Maes (Belgium)

RETENTION OF RADIONUCLIDES (CAESIUM, NICKEL) IN FRACTURE INFILLS UNDER DIFFERENT GEOCHEMICAL CONSTRAINS **PA5-20**
F. Jankovský, K. Kočan, V. Havlová, M. Zuna, L. Mareda (Czech Republic)

INFLUENCE OF THE COMPETITION OF Al ON THE RETENTION OF TRIVALENT ACTINIDES AND THEIR HOMOLOGUES IN FELDSPAR **PA5-21**
J. Lessing, J. Neumann, F. Bok, J. Lützenkirchen, V. Brendler, M. Schmidt, T. Stumpf (Germany, USA)

CHEMICAL TOMOGRAPHY OF PYRITE COMPOSITES EXTRACTED FROM OPALINUS CLAY AND REACTED WITH NEPTUNIUM AND PLUTONIUM **PA5-22**
M. Breckheimer, S. Amayri, D. Ferreira Sanchez, D. Grolimund, T. Reich (Germany, Switzerland)

INTERACTIONS BETWEEN RADIONUCLIDES AND CALCITE SURFACE **PA5-23**
X. Li, M. Matulova, A. Sticker, E. Puhakka, S. Guo, M. Delnero, F. Jankovsky, L. Mareda, M. Siitari-Kauppi (Finland, Czech Republic, Germany, France)

THE STUDY OF MARINE SOLUTIONS INFLUENCES ON THE SORPTION OF ^{226}Ra TO MINERALS **PA5-24**
J. Wang, B. A. Powell (USA)

MOLECULAR SCALE UNDERSTANDING OF Ni^{2+} ADSORPTION ON SWELLING CLAY MINERALS **PA5-25**
V. Stotskyi, F. Di Lorenzo, M. Marques Fernandes, M. Krack, A. Scheinost, M. Lanson, B. Lanson, S. V. Churakov (Switzerland, Germany, France)

SORPTION PROPERTIES OF Eu ONTO GRANITE AND MX-80 BENTONITE IN Ca-Na-Cl SOLUTIONS **PA5-26**
J. Liu, S. Nagasaki, T. Yang (Canada)

SORPTION OF SELECTED RADIONUCLIDES ON CANADIAN SEDIMENTARY AND CRYSTALLINE ROCKS UNDER SALINE CONDITIONS **PA5-27**
T. Yang, S. Nagasaki (Canada)

UPTAKE OF NIOBIUM BY CEMENT AND C-S-H PHASES IN THE ABSENCE AND PRESENCE OF ISA AND CHLORIDE: QUANTIATIVE DESCRIPTION AND MECHANISTIC UNDERSTANDING **PA5-28**
Y. Jo, N. Cevirim-Papaioannou, M. Fuss, K. Franke, B. de Blochouse, M. Altmaier, X. Gaona (Germany, Korea)

INFLUENCE OF Na-Ca-Cl AND Ca-Na-Cl PHYSICOCHEMICAL SOLUTION PROPERTIES ON THE ADSORPTION OF ^{79}Se(-II) AND ^{99}Tc(IV) ONTO SEDIMENTARY AND CRYSTALLINE ROCKS **PA5-29**
J. Racette, S. Nagasaki, T. Yang (Canada)

INFLUENCE OF TEMPERATURE ON CATION ION EXCHANGE AND SORPTION TO MONTMORILLONITE CLAY **PA5-30**
B. A. Powell, R. Williams, X. Tang, S. Kwong-Moses, M. Riss, S. L. Estes (USA)

PLUTONIUM ADSORPTION TO HEMATITE AT VARIABLE pH, TEMPERATURE, AND CONCENTRATION **PA5-31**
S. Kwong-Moses, S. L. Estes, B. A. Powell (USA)

METAL IONS ADSORPTION AND MODELING ON A PRE-NEOGENE SEDIMENTARY ROCK **PA5-32**
L. Hou, K. Toda, T. Saito (Japan)

PA6 COLLOID FORMATION

ID

STRENGTHENED EROSION RESISTANCE OF COMPACTED BENTONITE BY OPPOSITELY-CHARGED MATERIALS: FROM COLLOIDAL PARTICLES INTERACTION TO EROSION EXPERIMENTS **PA6-4**
Z. Chen, G. Zu, H. Hou, Z. Zhang, P. Gao, Q. Jin, W. Wu, Z. Guo (China)

PROBING THE NUCLEATION AND GROWTH OF PuO_2 NANOPARTICLES IN AQUEOUS SOLUTION **PA6-5**
S. Bayle, M. Virot, T. Dumas, X. Le Goff, D. Menut, S. Dourdain, S. I. Nikitenko (France)

PA7 EXPERIMENTAL METHODS

ID

GEOCHEMICAL INFLUENCE ON THE RADIONUCLIDE MOBILITY IN GEOLOGICAL FORMATIONS ANALYSED BY ICP-MS AND ICP-QQQ COUPLING METHODS **PA7-5**
R. Kautenburger, K. Brix, A. Haben (Germany)

SIMULTANEOUS DETERMINATION OF TRANSURANIUM RADIONUCLIDES BY COMPACT ACCELERATOR MASS SPECTROMETRY **PA7-6**
S. Xing, C. Peng, M. Christl, K. Shi, H.-A. Synal, X. Hou, N. Kuzmenkova (China, Switzerland, Russia)

IMPROVED SOLID PHASE EXTRACTION MATERIALS FOR Sr-90 AND Cs-137 **PA7-7**
J. He (China)

MIXED FROM A WASTE COCKTAIL: CONSIDERATIONS ON BACKGROUND ELECTROLYTE'S COMPOSITION AND SALINITY, PBTC AND IRON INFLUENCING THE RETENTION OF REPOSITORY-RELEVANT ELEMENTS ON POTENTIAL BARRIER MATERIALS **PA7-8**
K. Brix, A. Haben, R. Kautenburger (Germany)

X-RAY ANALYSES ON RADIOACTIVE MATTER AT THE MARS BEAMLINE OF SYNCHROTRON SOLEIL **PA7-9**
P. L. Solari, D. Menut, M. Hunault, W. Breton (France)

PA8 COMPUTATIONAL CHEMISTRY

ID

MOLECULAR UNDERSTANDING OF HYDROGEN ADSORPTION AND TRANSPORT IN HYDRATED Na- AND Ca-MONTMORILLONITES IN THE CONTEXT OF GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE **PA8-5**
P. Citli, A. Kalinichev (France)

MOLECULAR LEVEL INSIGHTS ON THE PHYSISORPTION MECHANISMS OF HYDROGEN GAS ON MONTMORILLONITE CLAY SURFACES **PA8-6**
S. M. Mutisya, A. G. Kalinichev (France)

MOLECULAR DYNAMICS COMPUTER SIMULATIONS OF THE EFFECTS OF ORGANIC MOLECULES ON THE CLAY-RADIONUCLIDE INTERACTIONS IN THE CONTEXT OF GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE **PA8-7**
J. Licko, A. G. Kalinichev (France)

SITE-SPECIFIC STRUCTURE AND ENERGETICS OF URANYL ADSORPTION AT HYDRATED MUSCOVITE (001) SURFACE PROBED BY CLASSICAL MOLECULAR DYNAMICS SIMULATIONS **PA8-8**
N. Loganathan, A. G. Kalinichev (USA, France)

PB2 DIFFUSION AND OTHER MIGRATION PROCESSES

ID

IN SITU INVESTIGATIONS: RADIONUCLIDE MOBILITY AT CONCRETE-ROCK-INTERFACE **PB2-10**
J. Sammaljärvi, X. Li, A. Martin, U. Mäder, M. Siitari-Kauppi (Finland, Switzerland)

HOW STRONG DOES NICKEL AFFECT THE SORPTION AND DIFFUSION OF ZINC IN COMPACTED ILLITE? **PB2-11**
L. Van Laer, D. Verhaegen, M. Aertsens, N. Maes (Belgium)

INTERACTION OF RADIONUCLIDES WITH FRACTURE FILLINGS AND MIGRATION THROUGH A MATRIX OF CRYSTALLINE HOST ROCK **PB2-12**
M. Zuna, F. Jankovský, K. Kočan, V. Znamínko, E. Bedrníková (Czech Republic)

STUDY OF THE INFLUENCE OF FRACTURE FILLINGS ON RADIONUCLIDE TRANSPORT IN CRYSTALLINE ROCK SYSTEMS **PB2-13**
M. Zuna, F. Jankovský, K. Kočan, J. Smutek, J. Kulenkampff (Czech Republic)

HOW DO ALTERATION AND STRUCTURAL HETEROGENEITIES INFLUENCE DIFFUSIVITY WITHIN GRANODIORITES? **PB2-14**
A. Kusturica, T. Schäfer (Germany)

ASSESSMENT OF CESIUM MIGRATION IN THE SHALLOW GROUNDWATER-SOIL SYSTEM OF A PROPOSED NNP SITE **PB2-15**
L. Sun, Q. Lin, D. Chen, W. Chen, Y. Chen, J. Yang, Y. Li, H. Wu, M. Kang (China)

OUT-LEACHING EXPERIMENTS OF ROCK CORES AFTER IRRADIATION BY NEUTRONS; STUDY OF PORE WATER SALINITY IN CRYSTALLINE ROCK **PB2-16**
M. Nyman, N. Pakkanen, X. Li, K. Helariutta, M. Siitari-Kauppi, L. Aioanei, T. Morales, A.-M. Jakobsson, J. Byegård (Finland, Romania, Sweden)

THE MIGRATION BEHAVIOR OF RADIOACTIVE COBALT AT THE REGION FOR A PROPOSED NUCLEAR POWER PLANT: EXPERIMENTS AND SIMULATION STUDIES **PB2-17**
Q. Lin, L. Sun, J. Zhou, D. Chen, W. Chen, Y. Chen, J. Yang, Y. Li, H. Wu, M. Kang (China)

PB3 COLLOID MIGRATION

ID

INSIGHT INTO IMPACT OF PHOSPHATE ON THE COTRANSPORT AND CORELEASE OF Eu(III) WITH BENTONITE COLLOIDS IN SATURATED QUARTZ COLUMNS **PB3-3**
Q. Tang, Z. Xu, D. Pan, W. Wu (China)

CO-TRANSPORT OF U(VI) AND COLLOIDAL BIOCHAR IN QUARTZ SAND HETEROGENEOUS MEDIA **PB3-4**
Q. Jin, Y. Sun, Z. Chen, Z. Guo (China)

COLLOID-MEDIATED TRANSPORT AND MECHANISM OF U(VI/IV) IN REDUCTION CONDITIONS **PB3-5**
D. Pan, X. Wei, X. Shi, W. Wu (China, Switzerland)

PB4 EFFECTS OF BIOLOGICAL AND ORGANIC MATERIALS

ID

EXPLORATION OF THE BIO-REDUCTION BEHAVIOR AND MECHANISM OF ^{99}TC(VII) BY *KLEBSIELLA VARIICOLA* STRAIN X-21 **PB4-8**
J. Gong, S. Chen, Y. Guo, F. Li, T. Lan, Y. Yang, J. Liao, N. Liu (China)

OVERVIEW ON THE EURAD WORKPACKAGE CORI (CEMENT-ORGANIC-RADIONUCLIDE-INTERACTIONS) **PB4-9**
M. Altmaier, D. Garcia, P. Henocq, N. Mace, T. Missana, D. Ricard, J. Vandenborre (Germany, Spain, France)

IMPACT OF THE DEGRADATION PRODUCTS OF UP2W FILTER AID MATERIAL ON THE UPTAKE OF RADIONUCLIDES BY CEMENT **PB4-10**
P. Szabó, A. Tasi, X. Gaona, A. C. Maier, S. Hedström, M. Altmaier, H. Geckeis (Germay, Sweden)

INFLUENCE OF MICROORGANISMS ON THE MOBILITY OF +3 ACTINIDES FROM THE WASTE ISOLATION PILOT PLANT **PB4-11**
J. Swanson, A. Navarrette, F. Stanley, H. Kim, J. Knox (USA)

IMPACT OF THE EXTRACTION OF SOLUBLE ORGANIC MATTER (SOM) FROM SOILS ON THE QUALITY OF INSOLUBLE ORGANIC MATTER (IOM) IN VIEW OF PROTON BINDING SITES AND RADIONUCLIDE BINDING **PB4-12**
M. Tesfa, J. Raya, R. Gougeons, P. Schmitt-Kopplin, G. Montavon (France, Germany)

CHARACTERIZATION OF BOOM CLAY (BC) DISSOLVED ORGANIC MATTER (DOM) AND ITS INTERACTION WITH RADIONUCLIDES **PB4-13**
M. Bouby, A. Thumm, A. Lunz, F. Geyer, C. Beiser, M. Altmaier, H. Geckeis, S. Brassinnes (Germany, Belgium)

PB5 FIELD AND LARGE-SCALE EXPERIMENTS

ID

PLUTONIUM TRANSPORT IN VADOSE ZONE SEDIMENTS UNDER ACIDIC SOLUTION CONDITIONS AT THE HANFORD SITE, USA **PB5-6**
T. Baumer, M. Zavarin, C. Pearce, H. P. Emerson, A. B. Kersting (USA)

STUDY OF THE MIGRATION BEHAVIOUR OF ANTHROPOGENIC ACTINIDES IN LAKE SEDIMENTS AND PEAT BOG CORES **PB5-7**
J. Wolf, S. Glatzel, R. Golser, A. Maier, M. Meszar, P. Steier, M. Strasser, M. Wagreich, A. Wiederin, K. Hain (Austria, Germany)

FULL-SCALE PROTOTYPE, A LONG-TERM EXPERIMENT AT ÄSPÖ LABORATORY, SWEDEN **PB5-8**
T. Morales Aguilera, J. Dahlström, S. Pontér, L. Alakangas, M. Kronberg (Sweden)

URANIUM SPECIATION IN SOILS AND SEDIMENTS IMPACTED BY ACIDIC RUNOFF ORIGINATING FROM ALUM SHALE WASTE ROCK **PB5-9**
M. K. Pelkonen, E. Reinoso-Maset (Norway)

PLUTONIUM AND Cs-137 MOBILITY IN AN EPHEMERAL STREAM BED AT NEVADA NATIONAL SECURITY SITE (NNSS), USA **PB5-10**
N. L. Wasserman, J. Stanberry, A. B. Kersting, M Zavarin (USA)

PB6 NATURAL ANALOGUES

ID

HYDRO-GEOPHYSICAL APPROACH TO UNDERSTAND THE DEPOSITIONAL AND GEOCHEMICAL CHARACTERISTICS OF THE URANIUM DEPOSITS IN THE OKCHEON METAMORPHIC BELT, KOREA **PB6-3**
S.-S. Lee, D. Shin, S.-W. Jeen, M. S. Sim, M.-H. Baik, J.-H. Ryu, Y. Yu, K.-K. Lee (Korea)

PC1 DATA SELECTION AND EVALUATION

ID

THE PSI CHEMICAL THERMODYNAMIC DATABASE TDB 2020 TO SUPPORT NAGRA SAFETY ASSESSMENTS FOR DEEP GEOLOGICAL REPOSITORY **PC1-6**
G. D. Miron, D. A. Kulik, R Wüst (Switzerland)

SOLUBILITY ASSESSMENT IN CRYSTALLINE AND SEDIMENTARY ROCKS **PC1-7**
E. Colàs, O. Riba, J. Rodríguez-Mestres, A. Valls, D. García, T. Yang, L. Duro (Spain, Canada)

BENCHMARKING THE THERMOCHIMIE DATABASE FOR ITS APPLICATION TO CEMENTITIOUS AND ARGILLACEOUS ENVIRONMENTS **PC1-8**
D. Jacques, S. Liu, V. Montoya, B. Madé, W. Bower, S. Brassinnes (Belgium, France, UK)

THEREDA - THERMODYNAMIC REFERENCE DATABASE **PC1-9**
X. Gaona, V. Brendler, D. Freyer, H. Moog, L. Wissmeier (Germany, Switzerland)

DIGITIZATION OF LITERATURE DATA AND SURFACE COMPLEXATION MODEL PARAMETER ESTIMATION FOR TRIVALENT AMERCIUM, CURIUM, AND EUROPIUM SORPTION **PC1-10**
E. Fix, F. M. Coutelot, M. Zavarin, B. A. Powell (USA)

STATE OF THE ART REPORT IN REDOX AND KINETICS APPLIED TO NUCLEAR WASTE DISPOSAL FACILITIES **PC1-11**
O. Riba, X. Gaona, P. E. Reiller, E. Colàs, G. Román-Ross, J. Begg, D. García, L. Duro, S. Brassinnes, B. Madé, W. Bower (Spain, Germany, France, Belgium, UK)

PC2 COUPLING CHEMISTRY AND TRANSPORT

ID

REACTIVE TRANSPORT MODEL OF THE LONG-TERM GEOCHEMICAL EVOLUTION AT THE DISPOSAL CELL SCALE IN A HLW REPOSITORY IN GRANITE **PC2-4**
J. Samper, L. Montenegro, A. Mon, L. De Windt, A.-C. Samper, E. García (Spain, France)

DEVELOPMENT AND IMPROVEMENT OF NUMERICAL METHODS AND TOOLS FOR MODELLING COUPLED PROCESSES **PC2-5**
F. Claret, G. Pepin, C. Cances, O. Kolditz, N. Prasianakis, A. Baksay, D. Lukin (France, Germany, Switzerland, Hungary, Czech Republic)

VARS GLOBAL SENSITIVITIES FOR REACTIVE TRANSPORT SIMULATIONS IN A HLW REPOSITORY IN GRANITE **PC2-6**
J. Samper, C. López, A. Mon, B. Pisani, A.-C. Samper, J. Samper, F. Lentijo (Spain, Uruguay)

PC3 DEVELOPMENT AND APPLICATION OF MODELS

ID

SUPPORTING TOOLS IN THE DEVELOPMENT OF THE THERMOCHIMIE DATABASE: THE XCHECK TOOL **PC3-3**
D. Pérez, J. Rodríguez-Mestres, E. Colàs, D. García, L. Duro, L. Harvey, W. Bower, S. Brassinnes, B. Madé (Spain, UK, Belgium, France)

PC5 SAFETY ASSESSMENT AND REPOSITORY CONCEPTS

ID

APPROACH OF CONSEQUENCE ANALYSES SUPPORTING THE SAFETY-BASED COMPARISON OF THE CANDIDATE SITING REGIONS FOR THE SWISS DEEP GEOLOGICAL REPOSITORY **PC5-1**
X. Li, O. X. Leupin, N. Diomidis, R. Wüst (Switzerland)

PD APPLICATION TO CASE STUDIES

ID

THE UK'S RADIOACTIVE WASTE MANAGEMENT AND ENVIRONMENTAL REMEDIATION (RADER) NATIONAL NUCLEAR USER FACILITY **PD-5**
K. Morris, F. Livens, J. Lloyd, S. Shaw, A. Stockdale (UK)

EFFECT OF SEASONAL ANOXIA ON TRACE ELEMENT AND PLUTONIUM CYCLING IN A WARM MONOMICTIC LAKE **PD-6**
F. Coutelot, J. Wheeler, R. Williams, N. Edayilam, N. Merino, N. Wasserman, D. I. Kaplan, A. B. Kersting, B. A. Powell, M. Zavarin (USA)

PRELIMINARY APPROACH FOR SAFETY DISPOSAL OF RADIOACTIVE WASTES FROM FDNPS FOR OPTIMIZATION OF WASTE MANAGEMENT STREAM **PD-7**
K. Iikima (Japan)

OVERVIEW OF THE JAPANESE RADIOACTIVE WASTE DISPOSAL PROJECT **PD-8**
A. Koike, K. Ishida, K. Kaku (Japan)

PE CIGÉO AND NORM

ID

MODELING OF HYDROGEOCHEMICAL PROCESSES INFLUENCING URANIUM MIGRATION IN ANTHROPIZED SUB-SAHARAN ENVIRONMENTS **PE-3**
L. De Windt, P. Grizard, C. Besançon, N. Seigneur, P. E. Reiller, M. Descostes (France)

HIGHLY SENSITIVE QUANTIFICATION OF AQUATIC NANOPARTICLES BY LIBD **PE-4**
T. Verron, M. Le Meur, M. Dia, P.-E. Peyneau, G. Montavon, B. Béchet, A. Piscitelli (France, Germany)

BACTERIAL DIVERSITY DOWNSTREAM FROM A FORMER URANIUM MINE AND IN WATERS FROM NATURALLY RADIOACTIVE MINERAL SOURCES: POTENTIAL ROLE ON URANIUM MIGRATION IN THE ENVIRONMENT **PE-5**
C. Sergeant, G. Holub, C. Mallet, M.-H. Vesvres, A. Beauger, P. Chardon, M. del Nero, O. Courson, G. Montavon, V. Breton (France)

WEDNESDAY (27. SEPTEMBER)

8:25 **CONFERENCE ANNOUNCEMENTS**

SESSION 11 A5: SOLID-WATER INTERFACE REACTIONS

Chair: S. Brassinnes (Belgium) and M. Zavarin (USA)

		ID
8:30	ELECTROSTATIC INTERACTIONS AT CLAY MINERAL SURFACES: AT THE CROSSROADS BETWEEN MINERALOGY, GEOCHEMISTRY, AND GEOPHYSICS *C. Tournassat (INVITED) (France, USA)*	**A5-5**
9:15	U(VI) SORPTION ON ILLITE IN THE PRESENCE OF CARBONATE STUDIED BY CRYOGENIC TIME-RESOLVED LASER FLUORESCENCE SPECTROSCOPY AND PARALLEL FACTOR ANALYSIS: COMPARISON WITH TRIVALENT LANTHANIDES *H. Mei, N. Aoyagi, T. Saito, Y. Sugiura, T. Ishidera, K. Tanaka, Y. Tachi (Japan)*	**A5-6**
9:40	RETENTION OF SILVER IN CEMENTITIOUS MATERIALS *N. Macé, J. Page (France)*	**A5-7**
10:05	ANALYSIS OF COBALT RETENTION BY Na- AND Ca- SMECTITE AND THE EFFECT OF EDTA PRESENCE *T. Missana, U. Alonso, M. García-Gutiérrez (Spain)*	**A5-8**
10:30	ACTINIDE ADSORPTION TO HEMATITE AT ELEVATED TEMPERATURES *S. L. Estes, S. Kwong-Moses, F. M. Coutelot, B. A. Powell (USA)*	**A5-9**
10:55	**BREAK**	

SESSION 12 A4: REDOX REACTIONS AND RADIOLYSIS EFFECTS

Chair: L. Duro (Spain) and D. Reed (USA)

		ID
11:15	EFFICIENT PHOTOREDUCTION STRATEGY FOR URANIUM IMMOBILIZATION BASED ON GRAPHITE CARBON NITRIDE HETEROJUNCTION NANOCOMPOSITES *S. Li, D. Pan, W. Wu (China)*	**A4-1**
11:40	URANIUM(VI) REDUCTION BY A DESULFITOBACTERIUM SPECIES IN PURE CULTURE AND IN ARTIFICIAL MULTISPECIES BIO-AGGREGATES *S. Hilpmann, I. Jeschke, D. Deev, M. Zugan, A. Lapanje, T. Rijavec, R. Hübner, F. Bok, S. Schymura, A. Cherkouk (Germany, Slovenia)*	**A4-2**
12:05	THE IMPACT OF SULFIDATION ON MAGNETITE-BOUND ^{99}Tc *T. Neill, O. Stagg, S. Shaw, K. Morris (UK, USA)*	**A4-3**

12:30 RECENT EXPERIMENTAL DEVELOPMENTS ON PLUTONIUM OXIDATION STATE DISTRIBUTION UNDER WIPP RELEVANT CONDITIONS **A4-4**
J.-F. Lucchini, U. Kaplan, A. E. Navarrette, J. L. Knox, C. Kutahyali Aslani, J. Beam (USA)

12:55 REDUCTION OF PERTECHNETATE BY MAGNETITE – INFLUENCE OF pH AND TIME **A4-5**
T. Zimmermann, A. F. Oliveira, N. Mayordomo, A. C. Scheinost (Germany, France)

13:20 **END OF ORAL SESSIONS OF WEDNESDAY**

THURSDAY (28. SEPTEMBER)

8:25 **CONFERENCE ANNOUNCEMENTS**

SESSION 13 B2: DIFFUSION AND OTHER MIGRATION PROCESSES

Chair: M. Glaus (Switzerland) and M. Siitari-Kauppi (Finland)

		ID
8.30	MIGRATION OF REDOX-SENSITIVE PLUTONIUM AND NEPTUNIUM IN OPALINUS CLAY ROCK: DEEPER INSIGHTS FROM IN-SITU REACTIVE TRANSPORT PATTERNS *D. Grolimund, S. Amayri, U. Kaplan, M. Breckheimer, P. J. B. Börner, T. Reich (Switzerland, Germany)*	**B2-1**
8:55	DIFFUSIVE TRANSPORT OF U(VI) AND AM(III) THROUGH OPALINUS CLAY STUDIED DOWN TO ULTRA-TRACE LEVELS *D. Glückman, F. Quinto, C. Joseph, V. Metz, K. Hain, P. Steier, H. Geckeis (Germany, Austria)*	**B2-2**
9:20	EFFECT OF THE WATER SATURATION ON THE DIFFUSION OF WATER AND SOLUTES IN REFERENCE CLAY-RICH POROUS MEDIA *L. Desert, S. Savoye, E. Ferrage, P. Hénocq, C. Tournassat, E. Tertre (France)*	**B2-3**
9:45	IMPACT OF CRACKING ON THE TRANSFER OF RADIONUCLIDES IN CEMENTITIOUS MATERIALS *J. Marliot, P. Sardini, C. Landesman, P. Henocq, M. Siitari-Kauppi, S. Hedan, J. Bodin (France, Finland)*	**B2-4**

10:10 **BREAK**

SESSION 14 E: CIGÉO

Chair: J.-C. Robinet (France) and P. Toulhoat (France)

		ID
10:30	DEVELOPMENT OF R&D ON RADIONUCLIDE MIGRATION FOR CIGÉO *J.-C. Robinet, C. Martin (INVITED) (France)*	**E-1**
11:15	IN SITU DIFFUSION OF ORGANIC COMPOUNDS IN ANDRA'S UNDERGROUND LABORATORY: A 4-YEAR INSIGHT FROM THE "DRO" EXPERIMENT *R. V. H. Dagnelie, S. Wechner, M. Labat, S. Daumas, C. Le Milbeau, Y. Lettry, M. Lundy (France, Germany, Switzerland)*	**E-2**
11:40	EVALUATING RADIONUCLIDES MOBILITY *IN SITU* IN THE CALLOVIAN-OXFORDIAN ARGILLACEOUS ROCK *M. I. Agnel, R. V. H. Dagnelie, E. Thory, B. Hautefeuille, Y. Lettry, M. Parisi, A. Vinsot (France, Switzerland)*	**E-3**
12:05	QUANTITATIVE ANALYSIS OF RADIONUCLIDE CONTAINMENT AS PART OF THE SAFETY ASSESSMENTS IN THE GERMAN SITE SELECTION PROCEDURE *C. Behrens, M. Gelleszun, S. Miro, A. Renz, P. Kreye, W. Rühaak (Germany)*	**E-4**

12:30 **BREAK**

SESSION 15 E: NORM

Chair: G. Montavon (France) and T. Schäfer (Germany)

		ID
14:00	WHAT RESEARCH CHALLENGES FOR NORM AND TE-NORM MANAGEMENT WORLDWIDE? *L. Fevrier (INVITED) (France)*	**E-5**
14:45	MODELLING OF RADIONUCLIDES MOBILITY AFTER LEGACY SITE RESTORATION: THE CASE OF FLUORITE SLUDGE NORM *M. Płachciak, F. Grandia (Spain)*	**E-6**
15:10	UNDERSTANDING URANIUM FATE IN WETLAND SOILS: A SPECIATION AND LABILE BEHAVIOR STUDY IN THE FORMER EXTRACTION MINE OF ROPHIN (FRANCE) *A.-L. Nivesse, C. Landesman, T. Arnold, S. Sachs, T. Stumpf, A. Scheinost, F. Coppin, L. Fevrier, C. Den Auwer, A. Gourgiotis, M. Del Nero, G. Montavon (France, Germany)*	**E-7**
15:35	MODELLING WATER CIRCULATION AND SOLUTE TRANSPORT AT A FORMER FRENCH URANIUM MINING SITE *A. Katz, E. Veilly, L. Février, D. Pérez-Sànchez, T. Arnold, F. Bok, G. Montavon, C. Bertin, P. Chardon, D. Sarramia, P. Vaudelet, C. Mallet, L. Urso (France, Germany)*	**E-8**
16:00	**BREAK**	

SESSION 16 A3: COMPLEXATION WITH INORGANIC AND ORGANIC LIGANDS

Chair: M. Altmaier (Germany) and W. Cha (Korea)

		ID
16:20	THE AQUATIC CHEMISTRY OF PENTAVALENT ACTINIDES (Np, Pu): DETERMINATION OF THE FIRST TWO HYDROLYSIS CONSTANTS *J. Aupiais, C. Chistin, M. Levier (France)*	**A3-1**
16:45	SPECTROSCOPIC STUDY ON FORMATION OF AQUEOUS URANIUM(VI)-SILICATE COMPLEXES AT ALKALINE pH *T.-H. Kim, E. C. Jung, Y. Jo, H.-K. Kim, H.-R. Cho, W. Cha, J.-I. Yun (Korea)*	**A3-2**
17:10	STRUCTURAL IDENTIFICATION OF AQUATIC U(VI)-PBTC COMPLEXES BY SPECTROSCOPIC INVESTIGATIONS *A. Wollenberg, J. Kretzschmar, S. Tsushima, R. Kraft, M. Kumke, M. Acker, S. Taut, T. Stumpf (Germany)*	**A3-3**
17:35	CHEMICAL EQUILIBRIUM OF PLUTONIUM(VI) IN WEAKLY ALKALINE SYSTEMS CONTAINING ALKALINE EARTH METAL IONS AND CARBONATE *Y. Jo, H.-R. Cho, X. Gaona, D. Fellhauer, K. Dardenne, J. Rothe, M. Altmaier, J.-I. Yun (Korea, Germany)*	**A3-4**
18:00	**END OF ORAL SESSIONS OF THURSDAY.** **MOVE TO BANQUET**	

FRIDAY (29. SEPTEMBER)

8:25 **CONFERENCE ANNOUNCEMENTS**

8:30 EURAD, A EUROPEAN PROGRAMME ON RADIOACTIVE WASTE MANAGEMENT, SCIENTIFIC OUTCOMES AND CHALLENGES AS SEEN BY THE EXTERNAL ADVISORY BOARD **D-5**
P Toulhoat, S. Engstroem Laarouchi, P. Lalieux, H. Wanner (INVITED) (France, Sweden, Belgium, Switzerland)

SESSION 17 A6: COLLOIDS

Chair: U. Alonso (Spain) and M. Bouby (Germany)

		ID
9:05	FORMATION, REACTIVITY AND COLLOIDAL BEHAVIORS OF TETRAVALENT URANIUM NANOPARTICLES UNDER GROUNDWATER CONDITIONS *W. Cha, I. H. Yoon, H. Cho, H.-R. Cho, E. C. Jung (Korea)*	**A6-1**
9:30	EVIDENCES ABOUT THE CONTRIBUTION OF PU(IV) OXO-HYDROXO CLUSTER $[PU_6(OH)_4O_4]^{12+}$ DURING THE FORMATION OF Pu(IV) INTRINSIC COLLOIDS *M. Virot, M. Cot-Auriol, T. Dumas, D. Menut, O. Diat, S. Dourdain, P. Moisy, S. I. Nikitenko (France)*	**A6-2**
9:55	ROLE OF NITRATE ON THE FORMATION AND RETENTION OF Th^{IV} NANOPARTICLES AT THE MUSCOVITE (001)-WATER INTERFACE *J. Neumann, J. Lessing, A. J. Carr, S. S. Lee, M. Patzschke, C. Taylor, P. J. Eng, J. E. Stubbs, P. Fenter, M. Schmidt (USA, Germany)*	**A6-3**
10:20	NEW CFM RADIONUCLIDE TRACER TEST DEDICATED TO KINETIC PROCESSES UNDER IN-SITU CONDITIONS AT THE GRIMSEL TEST SITE *F. Quinto, I. Blechschmidt, M. Bouby, Z. Chen, H. Geckeis, B. Lanyon, C. Marquardt, U. Noseck, M. Plaschke, R. Schneeberger, T. Schäfer (Germany, Switzerland, UK)*	**A6-4**
10:45	REVEALING THE ORIGIN AND ION-BINDING PROPERTIES OF DISSOLVED ORGANIC MATTTERS IN DEEP SEDIMENTARY GROUNDWATER *T. Saito, S. Nishi, H. Sato, K. Toda, K. Miyakawa (Japan)*	**A6-5**

11:10 **BREAK**

SESSION 18 A5: SOLID-WATER INTERFACE REACTIONS: EXPERIMENTS AND MODELLING

Chair: B. Madé (France) and C. Tournassat (France)

		ID
11:30	RETENTION AND TRANSPORT BEHAVIOUR OF SELENIUM(IV) IN HARDENED CEMENT PASTE: EFFECT OF HIGH SULPHATE CONCENTRATIONS *C. Landesman, S. Ribet, K. David, N. Bessaguet, P. Henocq (France)*	**A5-10**
11:55	RETENTION OF STRONGLY HYDROLYZING METAL IONS IN CEMENT SYSTEMS: QUANTITATIVE DESCRIPTION AND MECHANISTIC UNDERSTADING *X. Gaona, N. Cevirim-Papaioannou, Y. Jo, N. Huber, A. Tasi, R. E. Guidone, I. Androniuk, K. Dardenne, J. Rothe, M. Altmaier, H. Geckeis (Germany, Korea)*	**A5-11**
12:20	THE OPTIMIZED GEMS CLAYSOR MODEL AND DATA BASES TO SUPPORT NAGRA SAFETY ASSESSMENTS FOR DEEP GEOLOGICAL REPOSITORY *G. D. Miron, O. Marinich, M. Marques Fernandes, D. A. Kulik, B. Baeyens, Raphael Wüst (Switzerland)*	**A5-12**
12:45	BENCHMARKING THE THERMOCHIMIE DATABASE: SOLUBILITY AND SPECIATION CALCULATIONS *E. Colàs, J. Rodríguez-Mestres, R. Mas, D. García, L. Duro, W. Bower, S. Brassinnes, B. Madé (Spain, England, Belgium, France)*	**A5-13**
13:10	**END OF THE CONFERENCE**	