

Migration 2017



Barcelona

September 10 – 15, 2017



Preliminary Programme 170522

Subject to slight changes and adjustments

Programme

SUNDAY (10. September)

12:00 noon **REGISTRATION**

5:00 pm **OPENING SESSION**

7:00 pm **RECEPTION**

MONDAY

MONDAY (11. SEPTEMBER)

9:00 am CONFERENCE ANNOUNCEMENTS

SESSION 1 A2: SOLID SOLUTION AND SECONDARY PHASE FORMATION

Chair:

- 9:15 am THE RELEVANCE OF SOLID SOLUTION - AQUEOUS SOLUTION SYSTEMS TO THE SAFETY CASE FOR DEEP GEOLOGICAL DISPOSAL OF NUCLEAR WASTES **A2-1**
D. Bosbach, F. Brandt, M. Klinkenberg, V. Vinograd, J. Weber, G. Deissmann (INVITED) (Germany)
- 10:00 am COFFINITE STABILITY AND IMPLICATIONS FOR SPENT NUCLEAR FUEL ALTERATION IN DEEP GEOLOGICAL DISPOSAL **A2-2**
L. Duro, J. Bruno, L. Z. Evins (Spain, Sweden)
- 10:25 am ENVIRONMENT-SPECIFIC TRACE METAL PARTITION COEFFICIENTS IN CALCITE-WATER SYSTEMS DEEP IN FRACTURED GRANITE **A2-3**
H. Drake, F.A. Mathurin, T. Zack, T. Schäfer (Sweden, Germany)
- 10:50 am BARITE RECRYSTALLIZATION IN THE PRESENCE OF **A2-4**
 ^{226}Ra AND ^{133}Ba
F. Heberling, V. Metz, J. Weber, M. Böttle, E. Curti, M. Klinkenberg, F. Brandt, H. Geckeis (Germany, Switzerland)
- 11:15 am BREAK

SESSION 2 B2: DIFFUSION AND OTHER MIGRATION PROCESSES

Chair:

- 11:35 am ANION ACCESSIBLE POROSITY IN LOW POROSITY DENSE CLAY SEDIMENTS **B2-1**
C. Wigger, L.R. Van Loon (Switzerland)

- 12:00 am INFLUENCE OF SALINITY AND TEMPERATURE ON THE DIFFUSION OF NEPTUNIUM(V) IN NATURAL CLAY **B2-2**
T. Reich, S. Amayri, P.J.B. Börner, R. Scholze (Germany)
- 12:25 pm EFFECTS OF HETEROGENEITY AT FRACTURE SURFACE FOR TRACER MIGRATION IN A FRACTURED CRYSTALLINE ROCK FROM THE GRIMSEL TEST SITE **B2-3**
Y. Tachi, T. Ito, Y. Akagi, H. Sato, A. J. Martin (Japan)
- 12:50 pm RELATIONSHIP BETWEEN DIFFUSION PROCESSES AND FABRIC PATTERN IN HIGH-GRADE METAMORPHIC ROCKS **B2-4**
V. Havlová, M. Zuna, L. Brázda, K. Verner (Czech Republic)
- 13:15 pm BREAK

SESSION 3 A4: REDOX REACTIONS AND RADIOLYSIS EFFECTS

Chair:

- 3:00 pm *Invited Keynote. TBC* **A4-1**
- 3:45 pm REDOX, SOLUBILITY AND SORPTION BEHAVIOUR OF PLUTONIUM IN THE PRESENCE OF ISOSACCHARINIC ACID AND CEMENT **A4-2**
A. Tasi, X. Gaona, D. Fellhauer, Th. Rabung, J. Rothe, M. Grivé, E. Colàs, J. Bruno, K. Källström, M. Altmaier, H. Geckeis (Germany, Spain, Sweden)
- 4:10 pm MULTIPLE BARRIER CONCEPT APPLIED TO ⁷⁹SELENIUM **A4-3**
L. Charlet, B. Ma, S. Chakraborty, M. Kang, A. Fernandez Martinez (France, India, China)
- 4:35 pm BREAK

MONDAY

SESSION 4 A3: COMPLEXATION WITH INORGANIC AND ORGANIC LIGANDS

Chair:

- 4:55 pm TEMPERATURE EFFECT ON THE FORMATION OF TERNARY CALCIUM URANYL CARBONATE COMPLEXES
Y. Jo, J.-I. Yun (Korea) **A3-1**
- 5:20 pm ACTINIDE(IV)-ORGANIC COMPLEXES ISOLATED FROM AQUEOUS SOLUTION
K.E. Knope (USA) **A3-2**
- 5:45 pm SYNTHESIS AND STRUCTURAL CHARACTERIZATION OF MIXED IRON-URANIUM COMPOUNDS WITH BIDENTATE N-DONOR LIGANDS
S. Schöne, T. Radoske, J. März, T. Stumpf, A. Ikeda-Ohno (Germany) **A3-3**
- 6:10 pm OXIDATIVE STABILITIES OF NON-PERTECHNETATE SPECIES IN ALKALINE MATRICES TYPIFYING HANFORD TANK WASTE
S. Chatterjee, T.G. Levitskaia, G.B. Hall, Y. Du, M.H. Engelhard, N.M. Washton, V. Shutthanandan, E.D. Walter (USA) **A3-4**
- 6:35 pm END

SESSION 5 POSTER SESSION I (7:00 – 10:00 PM)

Chair:

TUESDAY (12. SEPTEMBER)**SESSION 6 C3: DEVELOPMENT AND APPLICATION OF MODELS***Chair:*

- 9:15 am Invited Keynote. TBC **C3-1**
- 10:00 am MICROTOMOGRAPHY-BASED INTERGRANULAR NETWORK FOR THE SIMULATION OF RADIONUCLIDE DIFFUSION AND SORPTION IN A GRANITIC ROCK **C3-2**
A. Iraola, P. Trinchero, M. Voutilainen, B. Gylling, J.-O. Selroos, J. Molinero, O. Silva, U. Svensson, G. Deissmann, D. Bosbach (Spain, Finland, Sweden, Germany)
- 10:25 am SULPHIDE FLUXES AND CANISTER CORROSION IN A DEPOSITION HOLE IN THE SPENT FUEL REPOSITORY AT OLKILUOTO, FINLAND: INSIGHTS FROM REACTIVE TRANSPORT MODELS USING AN EXPLICIT TREATMENT OF ELECTRICAL DOUBLE LAYERS **C3-3**
P. Alt-Epping, M. Pekala, P. Wersin, P. Pitkänen (Switzerland, Finland)
- 10:50 am MODELING WASTE PACKAGE DEGRADATION AND WASTE FORM DISSOLUTION FOR GEOLOGIC REPOSITORY PERFORMANCE ASSESSMENT IN PFLOTRAN **C3-4**
J.M. Frederick, G.E. Hammond, P. Mariner, E. Stein, S.D. Sevougian (USA)
- 11:15 am BREAK

SESSION 7 A5: SOLID-WATER INTERFACE REACTIONS*Chair:*

TUESDAY

- 11:35 am MODELING URANIUM(VI) ADSORPTION ONTO MONTMORILLONITE UNDER VARYING CARBONATE CONCENTRATIONS: A SURFACE COMPLEXATION MODEL ACCOUNTING FOR THE SPILLOVER EFFECT ON SURFACE POTENTIAL **A5-1**
C. Tournassat, R-M. Tinnacher, S. Grangeon, J.A.Davis (France, USA)
- 12:00 am THE INFLUENCE OF ORGANIC MATTER ON THE SORPTION OF ZN ON ILLITE AND BOOM CLAY **A5-2**
L.Van Laer, N. Maes, M. Van Gompel, C. Bruggeman, S. Brassinnes (Belgium)
- 12:25 pm IDENTIFICATION OF URANIUM SORPTION SPECIES ON GRANITE IN THE ABSENCE AND PRESENCE OF PHOSPHATE **A5-3**
D. Pan, Q. Fan, W. Wu (China)
- 12:50 pm SORPTION OF RADIONUCLIDES ON THE HOST ROCKS OF THE FUTURE RUSSIAN HLW REPOSITORY: ROLE OF THE DIFFERENT MINERAL PHASES **A5-4**
V. Petrov, I. Vlasova, A. Rodionova, N. Kuzmenkova, V. Yapaskurt, V. Petrov, V. Poluektov, S. Kalmykov, J. Hammer (Russia)
- 13:15 pm BREAK

SESSION 8 A8: COMPUTATIONAL CHEMISTRY

Chair:

- 3:00 pm *B. Rotenberg (INVITED) (France)* **A8-1**
- 3:45 pm QUANTUM CHEMICAL MODELING OF An(VI/V) HYDROLYSIS COMPLEXES: CHARACTERIZATION OF SPECIES AND THEIR RELATIVE STABILITIES **A8-2**
I. Chiorescu, A. Gray, S. Krüger, N. Rösch (Germany)
- 4:10 pm A CONSISTENT MOLECULAR MODEL TO PREDICT THE **A8-3**

BEHAVIOURS OF EARLY TETRAVALENT ACTINIDES
IN AQUEOUS SOLUTION: FROM THORIUM TO
PLUTONIUM

E. Acher, M. Masella, V. Vallet, F. Réal (France)

4:35 pm BREAK

SESSION 9 A4: REDOX REACTIONS AND RADIOLYSIS EFFECTS

Chair:

4:55 pm NEW ASPECTS OF THE MECHANISM OF HYDROGEN EFFECT ON SPENT FUEL DISSOLUTION **A4-4**
L. Bauhn, N. Hannson, K. Spahiu (INVITED) (Sweden)

5:40 pm NEAR-FIELD IRON CORROSION EFFECT ON ²³⁸PU-DOPED SON68 BOROSILICATE GLASS ALTERATION IN CALLOVO-OXFORDIAN GROUNDWATER **A4-5**
T. De Echave, M. Tribet, S. Gin, C. Jégou (France)

6:05 pm REDOX SPECIATION OF URANIUM WITH AMINOTRIS(METHYLENEPHOSPHONIC ACID) (ATMP) IN AQUEOUS MEDIUM **A4-6**
A. Srivastava, B.S. Tomar (India)

6:30 pm RADIOCHEMISTRY VS. RADIATION CHEMISTRY : URANIUM AND TECHNETIUM SPECIATION UNDER RADIATION **A4-7**
J. Vandenborre, G. Blain, F. Haddad, M. Fattahi (France)

6:55 pm BREAK

SESSION 10 POSTER SESSION II (7:00 – 10:00 PM)

Chair:

WEDNESDAY (13. SEPTEMBER)**SESSION 11 CEMENTITIOUS ENVIRONMENTS***Chair:*

- 9:15 am *B. Lothenbach (INVITED) (Switzerland)* **X-1**
- 10:00 am IMPACT OF ORGANIC LIGANDS ON THE SOLUBILITY OF ACTINIDES UNDER REPOSITORY-RELEVANT pH / Eh CONDITIONS **X-2**
X. Gaona, M. Altmaier, H. Geckeis (Germany)
- 10:25 am NICKEL(II) SOLUBILITY, HYDROLYSIS AND COMPLEX FORMATION WITH ISA UNDER ALKALINE TO HYPERALKALINE CONDITIONS **X-3**
M.R. González-Siso, X. Gaona, L. Duro, M. Altmaier, J. Bruno (Spain, Germany)
- 10:50 am MOLYBDATE SORPTION IN CEMENTITIOUS MATERIALS AND IN-SITU MEASUREMENT OF REDOX POTENTIAL IN REINFORCED CONCRETE **X-4**
B. Ma, A. Fernandez-Martinez, C. Tournassat, S. Grangeon, F. Claret, B. Madé, L. Charlet (France)
- 11:15 am BREAK

SESSION 12 A7: EXPERIMENTAL METHODS*Chair:*

- 11:35 am QUASI - NON-DESTRUCTIVE INVESTIGATION OF ACTINIDE PARTICLES - RECENT APPLICATIONS OF THE SECONDARY NEUTRAL IONISATION SIMS – **A7-1**
C. Walther, H. Bosco, L. Hamann, M. Weiss, M. Franzmann, K. Wendt (Germany)
- 12:00 am USE OF QUANTITATIVE DIGITAL AUTORADIOGRAPHY TECHNIQUE TO INVESTIGATE THE CHLORINE-36-LABELLED **A7-2**

RADIOTRACER TRANSPORT IN CONCRETE:
EXPERIMENTAL VS. MODELLING APPROACHES
N. Macé, S. Savoye, P. Fichet, C. Lim, S. Lefèvre, J. Page
(France)

12:25 pm HIGH ENERGY RESOLUTION X-RAY SPECTROSCOPY STUDIES OF ELECTRON-ELECTRON INTERACTIONS IN ACTINIDE AND LANTHANIDE SYSTEMS **A7-3**
K.O. Kvashnina, A. Rossberg, J. Exner, A.C. Scheinost
(Germany)

12:50 pm A NOVEL ANALYTICAL METHOD FOR THE ULTRA-TRACE DETERMINATION OF ACTINIDES AND ⁹⁹Tc IN NATURAL WATER SAMPLES WITH ACCELERATOR MASS SPECTROMETRY **A7-4**
F. Quinto, T. Faestermann, J. M. Gómez Guzmán, K. Hain, G. Korschinek, P. Ludwig, M. Plaschke, T. Schäfer, P. Steier, H. Geckeis (Germany, Austria)

13:15 pm **FREE AFTERNOON**

The Fundación Bancaria "la Caixa" has kindly offered the possibility to make a special guided tour of CosmoCaixa. This is a superb science museum belonging to the "la Caixa" Obra Social located in Barcelona.

<https://obrasociallacaixa.org/en/ciencia/cosmocaixa/el-museo>

THURSDAY (14. SEPTEMBER)**SESSION 13 D: REAL CASE STUDIES***Chair:*

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| 9:00 am | IMPLEMENTING GEOCHEMISTRY IN THE MANAGEMENT OF MINING WASTES
<i><u>D. Arcos</u> (INVITED) (Spain)</i> | D-1 |
| 9:45 am | FUKUSHIMA....
<i><u>K. Iijima</u> (INVITED) (Japan)</i> | D-2 |
| 10:30 am | REMEDICATION OF NUKEM'S FUEL PRODUCTION SITE -BASE FOR DEVELOPING A PHASED APPROACH TO CHARACTERISE AND REMEDIATE RADIOACTIVELY CONTAMINATED SITES
<i><u>H.G. Jung, J. Heiduk, F. Langer, F. Scheuermann</u> (Germany)</i> | D-3 |
| 10:55 am | REMEDICATION OF A URANIUM ACIDIC IN SITU RECOVERY MINE: FROM LABORATORY TO FIELD EXPERIMENTS USING REACTIVE TRANSPORT MODELLING
<i><u>H. De Boissezon, M. Descostes</u> (France)</i> | D-4 |
| 11:20 am | BREAK | |

SESSION 14 A6/B3: COLLOID FORMATION/COLLOID MIGRATION*Chair:*

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| 11:40 am | REDUCED URANIUM (VI) MOBILITY DUE TO COLLOID FORMATION IN AN ALKALINE AND SALINE PLUME
<i><u>M.E. Kirby, J.A. Weddepohl, J.S. Watson, Y. Peng, J.P.L. Kenney, P. Lai, J., Najorka, J. Cuadros, S. Krevor, D.J. Weiss</u> (UK, Canada)</i> | A6-1 |
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- 12:05 pm HETEROAGGREGATION BETWEEN INTRINSIC COLLOIDS AND CARRIER COLLOIDS: IMPLICATIONS FOR CERIUM(III) MOBILITY THROUGH FRACTURED CARBONATE ROCKS
E. Tran, O. Klein Ben-David, N. Teutch, N. Weisbrod (Israel) **B3-1**
- 12:30 pm COLLOIDAL PROPERTIES OF DIFFERENT SMECTITE CLAYS: SIGNIFICANCE FOR BENTONITE BARRIER EROSION AND RADIONUCLIDE TRANSPORT IN HIGH LEVEL WASTE REPOSITORIES
T. Missana, U. Alonso, A.M. Fernández, M. García-Gutiérrez (Spain) **A6-2**
- 12:55 pm PLUTONIUM OXIDE NANOPARTICLES: FORMATION AND PROPERTIES
A.Yu. Romanchuk, T.V. Plakhova, A.V. Egorov, A.L. Trigub, S.N. Kalmykov (Russia) **A6-3**
- 13:20 pm BREAK

SESSION 15 B: EFFECTS OF BIOSPHERE

Chair:

- 3:00 pm *Invited Keynote. TBC* **B**
- 3:45 pm COMPARATIVE STUDY OF TWO FUNGI AND THEIR MOLECULAR INTERACTIONS WITH URANIUM(VI) AND EUROPIUM(III)
A. Wollenberg, A. Guenther, J. Raff, T. Stumpf (Germany) **B-2**
- 4:10 pm SPECIATION OF TRANSURANIC RADIONUCLIDES IN WATER BODIES OF SEMIPALATINSK TEST SITE (LABORATORY AND FULL-SCALE EXPERIMENTS)
A.Toropov, L. Rikhvanov (Russia) **B-3**
- 4:35 pm OXIDATION STATE TRANSFORMATIONS OF PLUTONIUM IN VADOSE ZONE
M. Maloubier, D. I. Kaplan, P. M. Almond, H. Emerson, B. A. Powell (USA) **B-4**

THURSDAY

5:00 pm BREAK

SESSION 16 B6: FIELD AND LARGE SCALE EXPERIMENTS

Chair:

- 5:20 pm PROGRESSION OF ELEVATED U CONCENTRATION IN DEEP GROUNDWATER AT FORSMARK - PRESENT UNDERSTANDING OF U MOBILITY AT THE SITE **B6-1**
J. Suksi, E-L. Tullborg, I. Pidchenko, L. Krall (Finland, Sweden, Germany)
- 5:45 pm URANIUM TRANSFER IN ANCIENT AND MODERN OXIDIZING ENVIRONMENT: AN EXAMPLE OF THE TULUKUY DEPOSIT, TRANSBAIKALIA, RUSSIA **B6-2**
V. Petrov, V. Poluektov, O. Andreeva, J. Hammer (Russia, Germany)
- 6:10 pm DETERMINATION OF STRONTIUM-90 AND CAESIUM-137 IN SOILS NEAR THE FUKUSHIMA NPS; TOWARD MODELLING DEPTH PROFILE AND MACRO-SCALE ATMOSPHERIC TRANSPORT **B-5**
T. Sasaki, D. Matoba, T. Kobayashi, K. Fujiwara, T. Dohi, N. Iijima (Japan)
- 7:30 pm CONFERENCE BANQUET

FRIDAY (14. SEPTEMBER)

SESSION 17 A1: SOLUBILITY AND DISSOLUTION

Chair:

- 9:15 am DOES CARBON-14 RELEASE FROM IRRADIATED ZIRCALOY CLADDINGS ? **A1-1**
T. Suzuki-Muresan, M.A. Bahri, R. Bouakkaz, X. Liu, J. Roques, V. Broudic, S. Perrin, M.B. Mokili, C. Landesman, A. Abdelouas, E. Simoni (France)
- 9:40 am SPECIATION OF CARBON-14 RELEASED FROM ACTIVATED STEELS UNDER CONDITIONS OF A GEOLOGICAL REPOSITORY **A1-2**
J. Mibus, N. Diomidis, S. Swanton, T. Suzuki - Muresan, M. Rodríguez Alcalá, J.L. Leganés Nieto, D. Bottomley, M. Herm, E. de Visser - Týnová, B.Z. Cvetkovic, T. Sakuragi, F. Druyts, T. Heikola, S. Williams (Switzerland, UK, France, Spain)
- 10:05 am SOLUBILITY LIMITING SOLID PHASE IN Zr(IV)/Th(IV) HYDROXIDE SYSTEMS UNDER ELEVATED TEMPERATURE: SOLUBILITY AND SWAXS STUDY **A1-3**
T. Kobayashi, S. Nakajima, S. Nishikawa, R. Motokawa, T. Saito, T. Sasaki (Japan)
- 10:30 am SOLUBILITY AND CARBONATE COMPLEXATION OF Tc (IV) IN ALKALINE, DILUTE TO CONCENTRATED SALINE SYSTEMS **A1-4**
A. Baumann, E. Yalçintas, X. Gaona, R. Polly, K. Dardenne, M. Altmaier, H. Geckeis (Germany)
- 10:55 am SOLUBILITY OF TRIVALENT LANTHANIDES IN THE PRESENCE OF CARBONATES **A1-5**
M. Grivé, M. López-García, E. Colàs, I. Campos, B. Madé (Spain, France)
- 11:20 am BREAK

FRIDAY

SESSION 18 C5: SAFETY ASSESSMENT AND REPOSITORY CONCEPTS

Chair:

- 11:40 am REGULATORY REVIEW OF RADIONUCLIDE SORPTION, SOLUBILITY AND OTHER NON-FLOW MIGRATION PARAMETERS IN THE SAFETY ASSESSMENT FOR A FINAL SPENT FUEL REPOSITORY AT THE FORSMARK SITE IN SWEDEN **C5-1**
B. Strömberg (Sweden)
- 12:05 pm HIGH LEVEL RADIOACTIVE WASTE DISPOSAL RELATED RADIOCHEMISTRY RESEARCH ACTIVITIES IN CHINA **C5-2**
C. Liu (China)
- 12:30 pm UNIFIED AND FLEXIBLE LIFETIME ASSESSMENT OF THE GROUNDWATER PATHWAYS FOR THE LLWR NEAR-SURFACE REPOSITORY **C5-3**
A. Proverbio, M. Kelly, D. Applegate, D. Jackson (UK)
- 12:55 pm EVALUATION OF THE IMPACTS OF NITRATE RELEASED FROM THE TRU WASTE ON THE GEOLOGICAL DISPOSAL REPOSITORY **C5-4**
K. Ishida, K. Fujisaki, I. Matubara, M. Tsukamoto, P. Bruines, K. Abumi, T. Tanaka, D. García, F. Bagaria, E. Coene, O. Silva, M. Grivé, J. Molinero (Japan, Spain)
- 13.20 pm **END**
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