

ReCosy 3rd Annual Workshop. 21st to 24th March 2011. Balaruc-les-Bains (Sète, France)

Monday 21st March

LUNCH / REGISTRATION

- 13:30-14:30** EUCG meeting (restricted to EUCG, CT and ExCom members)
- 14:30-16:30** ExCom meeting (restricted to ExCom members and CT)
- 16:30-17:30** WP2 Internal meeting (Room 2)

Parallel room sessions

17:30-18:30
WP3 Internal meeting (Room 1)

18:30-19:30
WP4 Internal meeting (Room 1)

17:30-18:30
WP6 Internal meeting (Room 2)

18:30-19:30
WP5 Internal meeting (Room 2)

20:00-22:00 Ice-breaking with POSTER (Session poster with buffet)

Tuesday 22nd March

- 8:45-9:00** Welcome address
- WP2 plenary:** **Development of redox determination methods** (WP leader: Michael Kumke, University of Potsdam, Physical Chemistry, (UPPC))
- 9:00-9:10** Introduction (WP leader: Michael Kumke, UPPC)
- 9:10-9:30** Some Practical Considerations on Potential Measurements (or Potentiometry Revisited) (M. Perdicakis, CNRS)



- 9:30-9:50** Pyrite-electrode potential measurements in reference solutions versus measured and computed redox potential. (*S. Betelu, Ch. Tournassat, and I. Ignatiadis, BRGM*)
- 9:50-10:10** Solubility and phase transformations of Np(V) hydroxide in NaCl solutions (*V.G. Petrov, X. Gaona, D. Fellhauer, S.N. Kalmykov, and M. Altmaier, MSU and KIT-INE*)
- 10:10-10:30** Redox Behavior of Tc(VII)/Tc(IV) Couple in various reducing systems (*T. Kobayashi, X. Gaona, D. Fellhauer, and M. Altmaier, ITU, KIT-INE*)
- 10:30-11:00** **COFFEE BREAK**
- 11:00-11:20** Recent developments of fiber-optical chemical sensing at UPPC (*M. Kumke and D. Steinbrück, UPPC*)
- 11:20-11:40** Final Report on ReCosy ICE on redox determination methods (*M. Altmaier, X. Gaona, D. Fellhauer, and G. Buckau, ITU, KIT-INE*)
- WP3 plenary: Redox response of defined and near-natural system** (*WP leader: Laurent Charlet, Centre National de la Recherche Scientifique / Geophysics and Intern Tectonophysics Laboratory (CNRS/LGIT)*)
- 11:40-11:50** Introduction (*WP leader: Laurent Charlet, CNRS/LGIT*)
- 11:50-12:10** Interaction of iron bearing minerals with dithionite in Boda Claystone samples (*K. Lázár, J. Megyeri, E. Bokori, Z. Máthé, HU*)
- 12:10-12:30** Electrochemical characterization of clays. Application to the Boda Siltstone Formation (*M. Perdicakis, K. Lázár, Y. Xu, Z. Máthé and L. Rouillard, CNRS and HU*)
- 12:30-14:20** **LUNCH**
- 14:20-14:40** Reactivity of Callovo-Oxfordian Argillite with Soluble Iodine and Selenium Species. An Electrochemical Approach (*M. Perdicakis, L. Rouillard, C. Bouchereau, CNRS*)
- 14:40-15:00** Title not yet available (*L. Charlet, CNRS/LGIT*)
- 15:00-15:20** Quantification of pyrrhotite O₂ consumption by using pyrite oxidation kinetic data (*L. Duro, M. Grivé, C. Domènech, D. Arcos, F. Clarens, I. Rojo, J. de Pablo, AMPHOS and CTM*)
- 15:20-15:40** The response in redox from additions of hydrogen and oxygen to natural deep groundwater/rock systems with active microorganisms (*K. Pedersen, J. Arlinger, L. Hallbeck, S. Lydmark, J. Johansson and A. Pääjärvi. MICANS*)

- 15:40-16:00** Modelling the dioctahedralsmectites CEC variation versus structural iron level to approach redox properties (*J. Hadi, C. Tournassat, S. Betelu, L. Charlet and I. Ignatiadis, BRGM and CNRS/LGIT*)
- 16:00-16:30** COFFEE BREAK
- WP4 plenary: Redox reactions of radionuclides** (*WP leader: Jan Tits, Paul ScherrerInstitut (PSI)*)
- 16:30 -16:40** Introduction (*WP leader: Jan Tits, PSI*)
- 16:40-17:10** Uranium immobilization in biofilms from a granitic nuclear waste repository research tunnel - A microscopic and spectroscopic study (*E. Krawczyk-Bärsch, K. Pedersen, A. Lehtinen, T. Arnold, HZDR*)
- 17:10-17:40** The influence of the redox state on the sorption of neptunium onto calcium silicate hydrates (*J. Tits, X. Gaona and E. Wieland, PSI, KIT-INE*)
- 17:40-18:10** XAFS Investigations of Np(V/VI) Redox Speciation in hyperalkaline TMA-OH solutions (*X. Gaona, J. Tits, K. Dardenne, E. Wieland, M. Altmaier, PSI, KIT-INE*)
- 19:30** WORKSHOP DINNER

Wednesday 23rd March

WP5 plenary: Redox processes in radionuclide transport (*WP leader: JuhaniSuksi, University of Helsinki (HU)*)

- 8:30-8:40** Introduction (*WP leader: JuhaniSuksi, HU*)
- 8:40-9:00** Speciation dependent transport properties of selenium in indurated clay rocks: the Opalinus clay (Mont Terri, Switzerland) and the Toarcian argillite (*B. Frasca, S. Savoye, O.X. Leupin, C. Wittebroodt, B. Grenut and J.-L. Michelot, CEA*)
- 9:00-9:20** The diffusive behaviour of U(+VI), Se (+IV), Se (+VI) and I(-I) through clayey hard-rocks under anaerobic conditions: Application to the Callovo-Oxfordian (*S. Savoye, B. Grenut, P. Meier and Th. Vercouter, CEA*)



- 9:20-9:40** Migration of UO_2^{2+} in BodaClaystone samples (*K. Lázár, II-HAS*)
- 9:40-10:00** Status of the work on sorption of Np, Pu, and Tc on natural clay (OPA and COx) and fracture filling material (*Christian Marquardt, KIT-INE*)
- 10:00-10:20** Fracture surface U as an indicator of recent redox-front (*J. Suksi, HU*)
- 10:20-10:40** Actinide speciation and local distribution in colloids collected in organic-rich pond (PA “Mayak”) (*V. Petrov, MSU*)
- 10:40-11:00** **COFFEE BREAK**

WP6 plenary: Redox reactions affecting the spent fuel source-term (*WP leader: DetlefWegen, Joint Research Centre – Institute for Trans-uranium Elements (JRC-ITU)*)

- 11:00-11:10** Introduction (*WP leader: Paul Carbol on behalf of DetlefWegen*)
- 11:10-11:30** Corrosion of Spent Fuel in Presence of H_2 (*P. Carbol, JRC-ITU*)
- 11:30-11:50** Studies on Thin Film Model Systems and on UO_2 in Presence of Corroding Fe (*A. Seibert, JRC-ITU*)
- 11:50-12:10** Redox reactivity of doped UO_2 - Effects on the reactivity towards H_2O_2 (*M. Jonsson, KTH*)
- 12:10-12:30** Mobilization and Immobilization of Radionuclides from Spent Nuclear Fuel in Presence of Magnetite (*B. Kienzler, KIT-INE*)
- 12:30-12:50** Np-Pu Immobilization on Iron Surface at Simulated HLW Repository Conditions (*D. Cui, STUDEVIK*)
- 12:50-13:10** Redox Potential in Near Field of Deep Geological Repository with Carbon Steel Waste Packages (*D. Dobrev, NRI*)
- 13:10-14:30** **LUNCH**

TOPICAL SESSION: Electrochemistry and Redox Processes

- 14:30-15:05** UK radioactive waste management, Importance of sound science underpinning safety assessments (*N. Smart, NDA*)
- 15:05-15:40** Redox Chemistry of multivalent metals and actinides in the WIPP (*D. Reed, LANL*)



- 15:40-16:15** The use of the electrochemical quartz crystal microbalance in corrosion investigations of spent nuclear fuel models (*A. Seibert, JRC-ITU*)
- 16:15-16:45** **COFFEE BREAK**
- 16:45-17:20** Ferrocene-mediated electron transfer between FeII adsorbed onto hydrous ferric oxide (HFO) and a solid electrode (*E. Silverter, La Traube*)
- 17:20-17:55** Electrochemical characterization of the redox properties of natural organic matter and iron bearing clay minerals (*M. Sander, ETH*)
- 20:00-22:00** **POSTER session with buffet**

Thursday 24th March

- 09:00-11:00** **Reporting by the Coordination Team** (*Coordination Team: M. Altmaier, B. Kienzler (KIT-INE), L. Duro, M. Grivé, V. Montoya (AMPHOS)*)
- Including briefing on:
WP1: Harmonization of work program and documentation of redox implications for the Safety Case
WP7: Knowledge management and dissemination & training
- 11:00-11:30** **COFFEE BREAK**
- 11:30-12:30** **General Assembly** (*Chair: Bernd Grambow, ARMINES*)

