9TH Clay CONFERENCE

HANNOVER, GERMANY
25–28 NOV 24

Conference Agenda

Overview and details of the sessions of this conference. Please select a date or location to show only sessions at that day or location. Please select a single session for detailed view (with abstracts and downloads if available).

Hide Presentations | Table View | Authors

Session Overview

Date: Sunday, 24/Nov/2024

List of all Posters
Location: **Eilenriedehalle A**
Display list by clicking here
The posters are on display every day! But they will be presented in three exhibition sessions. See below in the agenda for presenter slots "Poster exhibition..." one poster exhibition session on each conference day.
Staff will support presenters in attaching their posters to the boards **on Sunday (during registration/icebreaker) and Monday morning**. Posters not removed by Thursday end of lunch will be disposed of.
Display list by clicking here

3:00pm - 6:00pm **Scientific support programme: Mini-lectures**
Location: **Blauer Saal**

6:00pm - 8:00pm **Icebreaker + Registration**
Location: **Eilenriedehalle A**

Date: Monday, 25/Nov/2024

8:30am - 10:00am **Registration**

10:00am - 10:30am **Opening ceremony**
Location: **Eilenriedehalle B**
Session Chair: **Astrid Göbel**, BGE, Germany
Session Chair: **Johanna Lippmann-Pipke**, Bundesanstalt für Geowissenschaften und Rohstoffe, BGR, Germany

10:30am - 12:00pm **Plenary #1: National Case Studies**
Location: **Eilenriedehalle B**
Session Chair: **Stéphan Schumacher**, Andra, France
Session Chair: **Maarten Van Geet**, ONDRAF/NIRAS, Belgium
Invited Keynote: Irina Gaus (Nagra, Switzerland) "Optimisation of Clay based Repository Concepts_from site selection to operations"

10:30am - 11:00am
Invited Keynote
ID: 459 / Plenary #1: 001
Optimisation of Clay based Repository Concepts_from site selection to operations
Irina Gaus
Nagra, Switzerland

11:00am - 11:20am
ID: 108 / Plenary #1: 002
Safety-driven site selection in Switzerland: the earth-science basis for the deep geological repository
Tim Vietor[1], Michael Schnellmann[1], Silvio Giger[1], Daniel Traber[1], Raphael Schneeberger[1], Gaudenz Deplazes[1], Niocalas Roy[1], Valentina Zampetti[1], Angela Landgraf[1], Andreas Ludwig[1], Urs H. Fischer[1], Jens Becker[1], Nathan Looser[2]
[1]Nagra, Switzerland; [2]ETH Zürich, Switzerland

11:20am - 11:40am
ID: 460 / Plenary #1: 003
German site selection – claystone related implementation and considerations
Nadine Schöner, Catherin Gemmel, Astrid Göbel, Sönke Reiche
BGE, Germany

11:40am - 12:00pm
ID: 267 / Plenary #1: 004
Site Descriptive Models as a tool to develop subsurface understanding in mudrock environments: A UK perspective
Jason Canning[1], Fiona McEvoy[1], Stephanie Kape[1], David Eastwell[1], Christian Strand[1], Rob Mclaverty[1], Chris Gilbert[2], Lee Hartley[2], Tom Haines[3], Dave McCarthy[4], Lorraine Field[4], Chris Jackson[5]
[1]Nuclear Waste Services, United Kingdom; [2]WSP; [3]Galson Sciences; [4]British Geological Survey; [5]Jacobs

12:00pm - 12:30pm **2 min poster presentation #1**
Location: **Eilenriedehalle B**

12:00pm - 12:02pm
2 min poster
ID: 2454

Study on the construction of disposal scenarios and a tentative migration modelling of cesium for the final disposal of radioactive-ly contaminated waste outside of Fukushima Prefecture

Eriko Minari, Kazuo Yamada, Kazuto Endo
National Institute of Environmental Studies, Japan

12:02pm - 12:04pm
2 min poster
ID: 2130

Investigating the Effects of Small Organic Molecules on the Adsorption of Uranyl on Clay Minerals with Molecular Dynamics

Jakub Ličko, Andrey G. Kalinichev
SUBATECH (UMR 6457 – IMT Atlantique, Nantes Université, CNRS-IN2P3), France

12:04pm - 12:06pm
2 min poster
ID: 2156

Numerical investigation of pore characteristics in spherical and platelet particle beds

Otono Miura[1], Ryunosuke Oishi[1], Tsubasa Yagi[2], Shusaku Harada[1]
[1]Hokkaido University, Japan; [2]Radioactive Waste Management Funding and Research Center, Japan

12:06pm - 12:08pm
2 min poster
ID: 2378

Migration of caesium decreases with increasing compaction of MX-80 bentonite

Theresa Hennig[1], Sina Grossmann[2], Jens Mibus[3], Luc R. Van Loon[4], Martin A. Glaus[4], Vinzenz Brendler[5]
[1]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Potsdam, Germany; [2]VKTA Radiation Protection, Analytics and Disposal Rossendorf Inc., Environmental and Radionuclide Analyses, Dresden, Germany; [3]Federal Office for the Safety of Nuclear Waste Management (BASE), Department A Supervision, Berlin, Germany; [4]Paul Scherrer Institut, Laboratory for Waste Management, Villigen PSI, Switzerland; [5]Helmholtz-Zentrum Dresden Rossendorf e.V., Institute of Resource Ecology, Dresden, Germany

12:08pm - 12:10pm
2 min poster
ID: 2172

Understanding the Effect of Indigenous Microorganisms in Bentonite on the Biocorrosion of Metal Canisters, for the Final Disposal of Nuclear waste (Under Relevant DGR Conditions)

Adam David Mumford[1], Marcos Martinez-Moreno[2], Cristina Povedano-Priego[2], Mar Morales-Hidalgo[2], Miguel Ruiz-Fresneda[2], Yon Ju-Nam[1], Mohamed L. Merroun[2], Jesus J. Ojeda[1]
[1]Swansea University, Department of Chemical Engineering, United Kingdom; [2]University of Granada, Department of Microbiology, Spain

12:10pm - 12:12pm
2 min poster
ID: 2293

Temperature Influence on Swelling Pressure of Ca-Bentonite up to 150 °C

Deuk-Hwan Lee, Gi-Jun Lee, Seeun Chang, Minhyeong Lee, Seok Yoon, Chnagsoo Lee, Dong-Keun Cho
Korea Advanced Energy Research Institute, Korea, Republic of (South Korea)

12:12pm - 12:14pm
2 min poster
ID: 2298

Implications of groundwater composition on the performance of ben-tonite components in nuclear waste disposal facilities

Han Ming Lai[1], Lidija Zdravkovic[1], David M. Potts[1], Matthew Kirby[2]
[1]Imperial College London, United Kingdom; [2]Nuclear Waste Services, UK

12:14pm - 12:16pm
2 min poster
ID: 2431

Role of poromechanical couplings in gas fracturing around an excavation

Mohammad-Youssef FALLAH-SOLTANABAD[1], Amade POUYA[1], Laurent BROCHARD[1], Minh-ngoc VU[2], Christophe DE LESQUEN[2]
[1]Navier Laboratory, Ecole des Ponts ParisTech, Gustave Eiffel University, CNRS, 77455 Marne la Vallée, France; [2]Andra R&D, 92290 Châtenay-Malabry, France

12:30pm - 1:30pm

Lunch Break

Location: **Eilenriedehalle A**

1:30pm - 2:30pm

Poster exhibition #1

Location: **Eilenriedehalle A**

ID: 395

Gas Transport in the Barrier – Lessons learnt from BenVaSim-II, EURAD-GAS and DECOVALEX2023

Michael Pitz[1,2], Gesa Ziefle[1], Jobst Maßmann[1], Eike Radeisen[1,4], Norbert Grunwald[3,2], Olaf Kolditz[3,4], Thomas Nagel[2,3]
[1]Federal Institute for Geosciences and Natural Resources; [2]Technische Universität Bergakademie Freiberg; [3]Helmholtz Center for Environmental Research; [4]Technical University Dresden

ID: 118

An Assessment Strategy for the Evaluation of Radionuclide Migration from Potential Repositories in Claystone

Christoph Behrens, Merle Bjorge, Julia Dose, Marlene Gelleszun, Niklas Meindl, Florian Panitz, Shorash Miro, Alexander Renz, Robert Seydewitz, Wolfram Rühaak, Stephanie Zeunert, Phillip Kreye
Bundesgesellschaft für Endlagerung mbH, Eschenstraße 55, 31224 Peine, Germany

ID: 327

CIGEO project - Analysis of the effect of segmental lining joints on the tunnel mechanical behaviour during the operational phase and over the long term

Marco Camusso[1], Minh-Ngoc Vu[2]

[1]ITASCA Consultants S.A.S., Lyon, France; [2]ANDRA, Châtenay-Malabry, France

Appl. Poster Award
ID: 185

Adapting disposal concepts to reflect emerging UK geologiccal environments

Matthew Edward Kirby, Simon Norris
Nuclear Waste Services, United Kingdom

ID: 271

New data on the compositional-structural characteristics of the Opalinuston Formation from Southern Germany: Facies-based investigations and mineralogical analyses

Tilo Kneuker[1], Thomas Mann[1], Reiner Dohrmann[1,2], Kristian Ufer[1], Jochen Erbacher[1], André Bornemann[1], Bernhard Schuck[1], Lukas Pollok[1]
[1]Federal Institute for Geosciences and Natural Resources, Hannover, Germany; [2]State Authority for Mining, Energy and Geology (LBEG), Hannover, Germany

Appl. Poster Award
ID: 142

Effects of ionic strength on cation exchange selectivities of Ca(II), Mg(II), K(I) for Na(I) in compacted and dispersed montmorillonite

Ryo Yasuda[1], Shingo Tanaka[1], Daisuke Hayashi[1], Hitoshi Owada[1], Tomoko Ishii[3], Yukinobu Kimura[2]
[1]Radioactive Waste Management Funding and Research Center, Japan; [2]Obayashi Corporation Co., Ltd.; [3]Taiheiyo Consultant Co., Ltd

ID: 229

Geochemical investigation of veins and evidence for paleo fluid flow in Opalinus Clay

Lukas Aschwanden[1], Nathan Looser[2], Martin Mazurek[1], Thomas Gimmi[1,3], Daniel Traber[4]
[1]University of Bern, Switzerland; [2]ETH Zürich, Switzerland; [3]Paul Scherrer Institut, Villigen, Switzerland; [4]NAGRA, Wettingen, Switzerland

ID: 300

Comparison of the clay mineralogy of fault and host rocks in the Opalinus Clay, Switzerland

Jonas Strasser, Susanne Gier, Kurt Decker
University of Vienna, Austria

ID: 343

CO2 Long-term Periodic Injection Experiment (Mont Terri URL): Introduction to the in-situ experiment and results of the first phase

Martin Ziegler[1], David Jaeggi[1], Rolf Kipfer[2], Antonio Pio Rinaldi[3], Anne Obermann[3], Jonas Junker[3], Hua Shao[4], Markus Furche[4]
[1]Federal Office of Topography, Mont Terri Underground Rock Laboratory, St. Ursanne, Switzerland; [2]Department Water Resources and Drinking Water, EAWAG, Dübendorf, Switzerland; [3]Swiss Seismological Service, ETH Zurich, Zurich, Switzerland; [4]Federal Institute for Geosciences and Natural Resources, Hannover, Germany

ID: 360

Extraction, Quantification and Isotopic Characterisation of Gases Dissolved in Porewater of Argillaceous Rocks - Method Comparison and Evaluation

Florian Eichinger[1], Laura Kennell[2], Niko Kampman[3]
[1]Hydroisotop GmbH, Germany; [2]NWMO, Canada; [3]Nuclear Waste Services, UK

ID: 157

GeM-DB – A basis for planning surface exploration programs

Raphael Dlugosch, Thies Beilecke, Tilo Kneuker, Lukas Pollok, Lisa Richter, Nicole Schubarth-Engelschall, Ralf Semroch
Federal Institute for Geosciences and Natural Resources, Germany

ID: 260

Influence of Rescue Chambers on the Design of Geological Repositories in Clay

Felix Lehnen, Berit Rauscher
Brenk Systemplanung GmbH, Germany

ID: 333

MiniSandwich experiment – performance test in laboratory of a bentonite-based shaft sealing system

Christopher Rölke[1], Katja Emmerich[2], Eleanor Bakker[2], Hua Shao[3]
[1]Institut für Gebirgsmechanik GmbH Leipzig (IfG), Germany; [2]Karlsruher Institut für Technologie (KIT), Germany; [3]Bundesanstalt für Geologie und Rohstoffe (BGR), Germany

ID: 404

Long term monitoring of physical and chemical parameters of a ce-mento-bentonitic filling material (CBFM) and of corrosion potential of a horizontal pipe made of carbon steel, submerged by the CBFM into a sealed cell of underground gallery

Ioannis IGNATIADIS[1], Yendoube Charles SANO MOYEME[2], Johan BERTRAND[3], Stéphanie BETELU[4]
[1]BRGM, France; [2]BRGM, France; [3]ANDRA, France; [4]BRGM, France

Appl. Poster Award
ID: 126

Multi-scale modelling of the Sandwich experiment in Mont Terri

Larissa Friedenberg, Matthias Hinze, Klaus Wieczorek
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany

Appl. Poster Award
ID: 454

Study on the construction of disposal scenarios and a tentative migration modelling of cesium for the final disposal of radioactive-ly contaminated waste outside of Fukushima Prefecture

Eriko Minari, Kazuo Yamada, Kazuto Endo

National Institute of Environmental Studies, Japan

Appl. Poster Award
ID: 204

All-solid-state reference electrode based on lithium lanthanum tita-nium oxide (LLTO) for the long term monitoring of nuclear waste dis-posals

Djouhar AOUBIDA[1,3], quoc-nghi PHAM[3], Stéphanie BETELU[1], Johan BERTRAND[2], Nita DRAGOE[3], Ioannis IGNATIADIS[1]
[1]BRGM (French Geological Survey), Orleans, France; [2]ANDRA (French national radioactive waste management agency), Châtenay-Malabry, France; [3]ICMMO (Institute of Molecular Chemistry and Materials), Orsay, France

Appl. Poster Award
ID: 310

Direct Mineral Content Prediction from Drill Core Images via Transfer Learning

Romana Boiger[1], Sergey V. Churakov[1,2], Ignacio Ballester Llagaria[1,3], Georg Kosakowski[1], Raphael Wüst[4,5], Nikolaos I. Prasianakis[1]
[1]Paul Scherrer Institute, Switzerland; [2]University of Bern, Switzerland; [3]ETH Zürich, Switzerland; [4]Nagra, Switzerland; [5]James Cook University, Australia

ID: 368

OpenWorkFlow - Open-source synthesis-platform for safety in-vestigations in the site selection process

Olaf Kolditz[1,4], Christoph Lehmann[1], Thomas Nagel[2], Christoph Behrens[3], Alexander Renz[3], Phillip Kreye[3], Wolfram Rühaak[3]
[1]Helmholtz-Zentrum für Umweltforschung GmbH UFZ, Germany; [2]TU Bergakademie Freiberg; [3]BGE Bundesgesellschaft für Endlagerung mbH; [4]Dresden University of Technology

ID: 184

DEVELOPMENT AND USE OF THE THERMOCHIMIE DATABASE

Stéphane Brassinnes[1], Benoît Madé[2], Will Bower[3]
[1]Belgian Agency for Radioactive Waste and Enriched Fissile Materials (ONDRAF/NIRAS); [2]Agence nationale pour la gestion des déchets radioactifs (Andra); [3]Nuclear Waste Services (NWS)

Appl. Poster Award
ID: 130

Investigating the Effects of Small Organic Molecules on the Adsorption of Uranyl on Clay Minerals with Molecular Dynamics

Jakub Lička, Andrey G. Kalinichev
SUBATECH (UMR 6457 – IMT Atlantique, Nantes Université, CNRS-IN2P3), France

Appl. Poster Award
ID: 156

Numerical investigation of pore characteristics in spherical and platelet particle beds

Otono Miura[1], Ryunosuke Oishi[1], Tsubasa Yagi[2], Shusaku Harada[1]
[1]Hokkaido University, Japan; [2]Radioactive Waste Management Funding and Research Center, Japan

ID: 244

Influence of salinity gradients on the diffusion of water and ionic species in dual porosity clay samples

Emmanuel Tertre[1], Thomas Dabat[1], Jingyi Wang[2], Sebastien Savoye[2], Fabien Hubert[1], Baptiste Dazas[1], Christophe Tournassat[3,4], Eric Ferrage[1]
[1]Université de Poitiers/CNRS, UMR 7285 IC2MP, Equipe HydrASA, 5 rue Albert Turpain, Bât. B8, TSA - 51106, 86073 Poitiers cedex 9, France; [2]Université Paris-Saclay, CEA, Service d'Etude du Comportement des Radionucléides, 91191 Gif-sur Yvette, France; [3]ISTO, UMR 7327, Univ. Orleans, CNRS, BRGM, OSUC, F-45071 Orléans, France; [4]Earth and Environmental Sciences Area, Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, CA, USA

ID: 270

Diffusion experiment (36Cl, 3H) across concrete/claystone interface

Urs Mäder[1], Lukas Martin[2], Carmen Zwahlen[3], Sandra Baur[4], Christoph Vockenhuber[5], Andreas Jenni[3], Martin Heule[4], Marcus Christl[5], Mirjam Kiczka[3], Josep Soler[6]
[1]Rock-Water Consulting, Boll, Switzerland; [2]Nagra, Wettingen, Switzerland; [3]University of Bern, Switzerland; [4]Paul Scherrer Institut, Switzerland; [5]ETH Zuerich, Switzerland; [6]CSIC Barcelona, Spain

ID: 313

Long Term Safety studies at EDF with code_saturne

Jérôme BONELLE, Marc KHAM, Raphael LAMOUROUX
EDF, France

Appl. Poster Award
ID: 325

Interaction of groundwater in crystalline rock and a compacted bentonite buffer

Michael Kröhn, Klaus-Peter Kröhn
GRS gGmbH, Germany

Appl. Poster Award
ID: 378

Migration of caesium decreases with increasing compaction of MX-80 bentonite

Theresa Hennig[1], Sina Grossmann[2], Jens Mibus[3], Luc R. Van Loon[4], Martin A. Glaus[4], Vinzenz Brendler[5]
[1]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Potsdam, Germany; [2]VKTA Radiation Protection, Analytics and Disposal Rossendorf Inc., Environmental and Radionuclide Analyses, Dresden, Germany; [3]Federal Office for the Safety of Nuclear Waste Management (BASE), Department A Supervision, Berlin, Germany; [4]Paul Scherrer Institut, Laboratory for Waste Management, Villigen PSI, Switzerland; [5]Helmholtz-Zentrum Dresden Rossendorf e.V., Institute of Resource Ecology, Dresden, Germany

Appl. Poster Award
ID: 397

Impact of temperature on the transfer of mobile tracers in the Toarcian clayrock at the Tournemire URL

Maïwenn Humbezi Desfeux[1], Jean-Michel Matray[1], Manuel Marcoux[2]
[1]Institut de Radioprotection et de Sûreté Nucléaire (IRSN), PSE-ENV/SPDR/LETIS, Fontenay-aux-Roses, F-92260, France;; [2]Institut de Mécanique des Fluides de Toulouse, UMR 5502 CNRS/INP/UPS 31400 Toulouse, France

ID: 236

Diffusion of Np through Illite du Puy

Claudia Joseph[1,2], Bianca Schacherl[1], Tonya Vitova[1], Polina Lavrova[1], Theresa Hennig[3], Michael Kühn[3,4]
[1]Karlsruhe Institute of Technology (KIT), Institute for Nuclear Waste Disposal (INE), Germany; [2]Bundesgesellschaft für Endlagerung, Germany; [3]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Germany; [4]University of Potsdam, Institute of Geosciences, Germany

ID: 150

Optimizing Wellbore Sealing with Japanese Na-Bentonite: In-sights from Two Vertical Wells at Grimsel Test Site, Switzerland

Takanori Kunimaru[1], Raphael Schneeberger[2], Armin Pechstein[2], Stratis Vomvoris[2]
[1]NUMO, Japan; [2]Nagra, Switzerland

ID: 254

Experimental and modelling study of the hydro-chemo-mechanical behaviour of sand bentonite mixtures in hyperalkaline conditions

Christophe IMBERT[1], Andrés IDIART[2], Sebastien SAVOYE[1], Wissem DRIDI[1], Marcelo LAVIÑA[2], Miquel DE LA IGLESIA[2], Nicolas MICHAU[3], Benoit COCHEPIN[3], Jean TALANDIER[3]
[1]Paris-Saclay University, CEA, DRMP, 91191, Gif-sur-Yvette, France; [2]Amphos 21 Consulting S.L., Barcelona, Spain; [3]Andra, R&D Division, F-92298 Châtenay Malabry, France

ID: 111

Reactive Transport Modelling of Material Interface Evolution in the HLW Near-field

Georg Kosakowski[1], Lukas Martin[2]
[1]Paul Scherrer Institut, Switzerland; [2]Nagra, Switzerland

Appl. Poster Award
ID: 172

Understanding the Effect of Indigenous Microorganisms in Bentonite on the Biocorrosion of Metal Canisters, for the Final Disposal of Nuclear waste (Under Relevant DGR Conditions)

Adam David Mumford[1], Marcos Martinez-Moreno[2], Cristina Povedano-Priego[2], Mar Morales-Hidalgo[2], Miguel Ruiz-Fresneda[2], Yon Ju-Nam[1], Mohamed L. Merroun[2], Jesus J. Ojeda[1]
[1]Swansea University, Department of Chemical Engineering, United Kingdom; [2]University of Granada, Department of Microbiology, Spain

ID: 226

Cation exchange parameters for Opalinus Clay and its confining units

Paul Wersin, Lukas Aschwanden, Mirjam Kiczka
University of Bern, Switzerland

ID: 257

Geochemical alteration in selected bentonites affected by thermal interaction with steel and saline solution hydration

Raúl Fernández, Carlos Mota-Heredia, Jaime Cuevas
Autonomous University of Madrid, Spain

ID: 275

Iron-bentonite interaction in a water-saturated low temperature environment: mineralogy and microstructure

María Jesús Turrero[1], Elena Torres[1], Pedro Luis Martín[1], Raúl Fernández[2], Ana Isabel Ruiz[2], Almudena Ortega[2], Antonio Garralón[1,2], Belén Notario[3], Carlos Mota[2], Jaime Fernando Cuevas[2]
[1]Ciemat, Madrid, Spain; [2]UAM, Madrid, Spain; [3]CENIEH, Burgos, Spain

ID: 305

Mineralogical evolution of COx claystone during in situ MCO experiment

Isabella Pignatelli[1], Nicolas Michau[2], Yannick Linard[2]
[1]Université de Lorraine, Laboratoire CRPG, CNRS UMR 7358, 15 rue Notre-Dame des Pauvres, 54500, Vandœuvre-lès-Nancy, France; [2]Andra, Scientific & Technical Division, Waste, Radionuclides, Chemicals & Geochemistry Department, 1/7 rue Jean Monnet, F-92298 Châtenay-Malabry CEDEX, France

ID: 376

Anoxic corrosion of carbon steel in different cementitious media and high temperature conditions: comparison between laboratory test and in situ experiment results

Charles Wittebroodt[1], Jules Goethals[2], Bojan Zajec[3], Valery Detilleux[4], Laurent De Windt[5]
[1]IRSN, France; [2]CEA, France; [3]ZAG, Slovenia; [4]Bel-V, Belgium; [5]Mines Paris, France

Appl. Poster Award
ID: 420

Redox buffering by iron-bearing clay minerals in the ferrous iron/smectite system

Harry J. L. Brooksbank[2], Anke Neumann[1,2]
[1]PSI Paul Scherrer Institut, Switzerland; [2]Newcastle University, UK

Appl. Poster Award
ID: 445

Modelling the reactive transport processes in unsaturated clay barriers – inclusion of capillary geochemistry

Shao-Jie Wu, Majid Sedighi, Andrey Jivkov
The University of Manchester, United Kingdom

ID: 225

Microbial ecology of engineered barrier components of a deep geological repository for used nuclear fuel

Rachel C. Beaver[1], Rhiannon Punch[1], Cailyn Perry[1], Claire S. Tully[2], Katja Engel[1], Melody A. Vachon[1], W. Jeffrey Binns[3], Chang Seok Kim[3], James J. Noël[2], Josh D. Neufeld[1]
[1]University of Waterloo, Waterloo, Canada; [2]Western University, London, Canada; [3]Nuclear Waste Management Organization, Toronto, Canada

---

ID: 423

Steel corrosion and reactive transport model in bentonite for predicting spent fuel disposal package lifetime

Milan Hokr[1], Lucie Baborová[2], Jan Šembera[1], Vratislav Žabka[1], Jan Stoulil[3], Dušan Vopálka[2], Eva Bedníková[4], Petr Večerník[4], David Dobrev[4]
[1]Technical University of Liberec, Czech Republic; [2]Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Czechia; [3]University of Chemistry and Technology Prague, Czechia; [4]ÚJV Řež, a.s., Czechia

---

ID: 117

Experimental study of swelling and permeability of a Bavarian bentonite, Friedland clay, and Opalinus clay at 35–150 °C

Artur Meleshyn, Matthias Hinze, Marvin Middelhoff
GRS gGmbH, Germany

ID: 238

A new experimental system for studying gas formation and release during laboratory rock core heating experiments

Christian Ostertag-Henning, Oliver Helten
Federal Institute for Geosciences and Natural Resources (BGR), Germany

---

Appl. Poster Award
ID: 293

Temperature Influence on Swelling Pressure of Ca-Bentonite up to 150 °C

Deuk-Hwan Lee, Gi-Jun Lee, Seeun Chang, Minhyeong Lee, Seok Yoon, Chnagsoo Lee, Dong-Keun Cho
Korea Advanced Energy Research Institute, Korea, Republic of (South Korea)

ID: 334

The CHENILLE experiment: Coupled beHaviour undErstaNdIng of fauLts: from the Laboratory to the fiEld

Rüdiger Giese[1], Audrey Bonnelye[2], Pierre Dick[3], Carolin Böse[1], Stefan Lueth[1], Ben Norden[1], Katrin Plenkers[4], Roman Esefelder[5], Christian Cunow[1], Sven Fuchs[1]
[1]German Research Centre for Geosciences GFZ, Germany; [2]Université de Lorraine, Georessources, Ecole des Mines de Nancy, France; [3]Institut de Radioprotection et de Sûreté Nucléaire (IRSN), PSE-ENV/SPDR/LETIS, Fontenay-aux-Roses, F-92260, France; [4]4 Gesellschaft für Materialprüfung und Geophysik (GmuG), Bad Nauheim, Germany; [5]Friedrich-Schiller-Universität, Institut für Geowissenschaften, Jena, Germany

---

ID: 393

COCONS: A numerical tool for Thermo-Hydro-Mecanical dimensioning of a deep geological repository High Level Waste area

Florian Escoffier, Sylvie Granet, Geoffroy Mélot, Isabelle Rupp
EDF R&D, France

ID: 120

HotBENT at the Grimsel Test Site - Early THMC evolution of a buffer at up to 200°C

Florian Kober[1], Raphael Schneeberger[1], Stefan Finsterle[2], Stratis Vomvoris[1], Bill Lanyon[3]
[1]Nagra, Switzerland; [2]Finsterle GeoConsulting, LLC, Kensington, CA, United States; [3]Fracture Systems Ltd., St. Ives, Great Britain

---

ID: 153

Thermo-hydraulic characterization of bentonite in partially saturated conditions at two temperature levels

Eleonora Crisci[1], Raphael Schneeberger[2], Alexandros Papafotiou[2], Florian Kober[2]
[1]Nesol Numerical Engineering Solutions, Lausanne, Switzerland; [2]Nagra, National Cooperative for the Disposal of Radioactive Waste, Wettingen, Switzerland

---

ID: 175

Identification of key parameters in coupled thermal-hydraulic analysis model for unsaturated Kunigel V1 bentonite

Yusaku Takubo[1], Yusuke Takayama[2], Keisuke Ishida[1]
[1]Nuclear Waste Management Organization of Japan (NUMO), Japan; [2]Japan Atomic Energy Agency (JAEA), Japan

---

ID: 207

Thermally Aged (165oC-200oC) Bentonite Performance

Sirpa Kumpulainen[1], Jari Martikainen[1], Teemu Laurila[1], Olivier Leupin[2], Florian Kober[2]
[1]MITTA, Finland; [2]Nagra, Switzerland

ID: 213

Swelling, outflow, and permeability characteristics of bentonite in NaCl solutions of various concentrations

Masanori Kohno, Shun Kohdo, Tsuyoshi Nishimura
Tottori University, Japan

ID: 219

Modelling air convection in a segmented buffer

Peter Eriksson
SKB, Sweden

Appl. Poster Award
ID: 295

Mineralogical and geotechnical characterization of two German bentonites from Westerwald and Bavaria

Ali Asaad[1], Antonia Nitsch[2], Wiebke Baille[2], Katja Emmerich[1]
[1]Institute of Concrete Structures and Building Materials (IMB, MPA, CMM), Karlsruhe Institute of Tech-nology (KIT), Karlsruhe, Germany; [2]Chair of Soil Mechanics, Foundation Engineering and Environmental Geotechnics, Department of Civil and Environmental Engineering, Ruhr-University Bochum, Bochum, Germany

Appl. Poster Award
ID: 298
Implications of groundwater composition on the performance of ben-tonite components in nuclear waste disposal facilities
Han Ming Lai[1], Lidija Zdravkovic[1], David M. Potts[1], Matthew Kirby[2]
[1]Imperial College London, United Kingdom; [2]Nuclear Waste Services, UK

ID: 338
The alteration of bentonite in contact with carbon steel
Šárka Šachlová[1], Petr Bezdička[2], Michaela Matulová[3], Vlastislav Kašpar[1], Karol Kočan[1], Zbyněk Veselka[4], Petr Večerník[1]
[1]ÚJV Řež, a.s., Radioactive waste and decommissioning; [2]Institute of Inorganic Chemistry of the Czech Academy of Sciences; [3]Radioactive Waste Repository Authority; [4]ÚJV Řež, a. s., Integrity and Technical Engineering,

Appl. Poster Award
ID: 455
Numerical Modelling of Volume Change Behaviour in Bentonite Buffer Exposed to Thermo-Hydraulic Gradients
Pavan Kumar Bhukya[1], Nandini Adla[1], Wang Xuerui[2], Dali Naidu Arnepalli[1]
[1]Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India; [2]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Braunschweig, Germany

ID: 180
Shear resistance of bentonite with non-uniformity distribution in suction
Tomoyoshi Nishimura[1], Takayuki Motoshima[2], Sachie Iso[2]
[1]Department of Civil Engineering, Ashikaga University, Tochigi, Japan; [2]Nuclear Facilities Division, Taisei Corporation, Tokyo, Japan

ID: 259
Verification of Von Mises and modified Cam clay models' imple-mentation using analytical solutions. Triaxial tests simulation.
Jordi Alcoverro[1], Xavier Pintado[2], Juha Kuutti[3], Ville Heino[4]
[1]Technical University of Catalonia, Spain; [2]Mitta Engineering Oy, Finland; [3]VTT, Finland; [4]Posiva Oy, Finland

ID: 440
Reactive transport models of the interactions of corrosion products and unsaturated FEBEX bentonite in laboratory and in situ tests
Javier Samper, Alba Mon, Luis Montenegro
Universidad de A Coruña, Spain

ID: 114
The impact of NaNO3 on the diffusion of dissolved gases in clay
Elke Jacops[1], Chloé Roonacker[2], Hannes Claes[3], Lander Frederickx[1], Anneleen Vanleeuw[1], Phung Quoc Tri[1], Jerry Peprah Owusu[4,6], Jon Harrington[5], Andy Wiseall[5,7], Christophe Bruggeman[1]
[1]SCK CEN, Belgium; [2]ULg, Belgium; [3]KU Leuven, Belgium; [4]PSI, Switzerland; [5]BGS, United Kingdom; [6]University of Bern, Switzerland; [7]NWS, United Kingdom

ID: 128
Modelling of mock-up tests for bentonite seals
Sonja Kaiser[1], Aqeel Afzal Chaudhry[1], Martin Hofmann[1], Thomas Nagel[1,2]
[1]TU Bergakademie Freiberg, Freiberg, Germany; [2]Freiberg Center for Water Research - ZeWaF, Freiberg, Germany

ID: 173
A study on buffer-material erosion under constant water head condition
Kenji Ishii[1], Akihiro Matsumoto[1], Ichizo Kobayashi[1], Hirohito Kikuchi[2], Daisuke Hayashi[2]
[1]Kajima Corporation, Tokyo, Japan; [2]Radioactive Waste Management Funding and Research Center, Tokyo, Japan

ID: 230
Filling efficiency of mono-sized pellets for sealing boreholes for a wide range of borehole-to-pellet diameter ratios
Ayaka Sakaki[1], Toshihiro Sakaki[2]
[1]International Christian University, Japan; [2]ESE Consulting LLC, Japan

ID: 358
Gas in radwaste deep geological repositories: example from Bure URL in clay rich formation
Rémi DE LA VAISSIERE, Jean TALANDIER, Christophe DE LESQUEN, Gilles ARMAND
ANDRA, France

Appl. Poster Award
ID: 377
Particle size evolution of granular bentonite on wetting and loading
Hao Zeng[1], Laura Gonzalez-Blanco[2,1], Enrique Romero[1,2]
[1]Universitat Politècnica de Catalunya (UPC), Barcelona, Spain; [2]International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain

Appl. Poster Award
ID: 431
Role of poromechanical couplings in gas fracturing around an excavation
Mohammad-Youssef FALLAH-SOLTANABAD[1], Amade POUYA[1], Laurent BROCHARD[1], Minh-ngoc VU[2], Christophe DE LESQUEN[2]
[1]Navier Laboratory, Ecole des Ponts ParisTech, Gustave Eiffel University, CNRS, 77455 Marne la Vallée, France; [2]Andra R&D, 92290 Châtenay-Malabry, France

ID: 337

Impact of Heterogeneity in 3D THM-G Modelling of Laboratory to Field-Scale Tests in the Context of Nuclear Waste Repository Design
Erdem Toprak, **Sebastia Olivella**
CIMNE, Spain

ID: 436
Assessment of the effect of heterogeneities on the hydromechanically coupled behavior of two German bentonites
Wiebke Baille[1], **Antonia Nitsch**[1], **Torsten Wichtmann**[1], **Ali Asaad**[2], **Katja Emmerich**[2]
[1]Ruhr-Universität Bochum, Germany; [2]Karlsruhe Institute of Technology (KIT), Germany

2:30pm - 3:50pm

PS #1: EDZ related processes
Location: **Roter Saal**
Session Chair: **Johanna Lippmann-Pipke**, Bundesanstalt für Geowissenschaften und Rohstoffe, BGR, Germany
Session Chair: **Christophe Nussbaum**, swisstopo, Switzerland

2:30pm - 2:50pm
ID: 383 / PS #1: 001
Design of HLW emplacement drifts in the Swiss deep geological repository in squeezing conditions
Julia Leuthold[1], **Linard Cantieni**[1], **Peter Kirchhofer**[2]
[1]Nagra, Switzerland; [2]AFRY Schweiz AG, Switzerland

2:50pm - 3:10pm
ID: 294 / PS #1: 002
Influence of geological and geotechnical boundary conditions on the host rock behavior – experiences from the twin niches in Mont Terri
Gesa Ziefle[1], **Tuanny Cajuhi**[1], **Stephan Costabel**[1], **Antoine Fourriere**[1], **Markus Furche**[1], **Jana Gerowski**[1], **Bastian Graupner**[2], **Jürgen Hesser**[1], **David Jaeggi**[3], **Kyra Jantschik**[4], **Tilo Kneuker**[1], **Olaf Kolditz**[5,6], **Herbert Kunz**[1], **Jobst Maßmann**[1], **Andreas Möri**[3], **Christian Ostertag-Henning**[1], **Marc Wengler**[7]
[1]Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Germany; [2]Eidgenössisches Nuklearsicherheitsinspektorat (ENSI), Switzerland; [3]Bundesamt für Landestopografie (swisstopo), Switzerland; [4]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS), Germany; [5]Helmholtz-Zentrum für Umweltforschung GmbH (UFZ), Germany; [6]Technische Universität Dresden (TU Dresden), Germany; [7]Bundesgesellschaft für Endlagerung (BGE), Germany

---

3:10pm - 3:30pm
ID: 322 / PS #1: 003
Non-isothermal behavior of excavation damaged zone around deep radioactive waste disposal
Saeed Tourchi[1], **Arash Lavasan**[1], **Antonio Gens**[2]
[1]University of Luxembourg; [2]Barcelona Tech (UPC)

3:30pm - 3:50pm
ID: 348 / PS #1: 004
Pore-water pressure response and permeability evolution around excavations in claystone beyond the EDZ
Álvaro D. Suárez[1], **Miguel A. Mánica**[1], **Eric Simo**[2,4], **Sandra E. Perales**[3], **Thomas Nagel**[4]
[1]Institute of Engineering, National Autonomous University of Mexico, Mexico City, Mexico; [2]BGE TECHNOLOGY GmbH, Peine, Germany; [3]Mextypsa, Mexico City, Mexico; [4]Geotechnical Institute, TU Bergakademie Freiberg, Germany

2:30pm - 3:50pm

PS #2: Bentonite stability
Location: **Bonatz Saal**
Session Chair: **Lucie Hausmannova**, SÚRAO, Czech Republic
Session Chair: **Patrik Sellin**, SKB, Sweden

2:30pm - 2:50pm
ID: 277 / PS #2: 001
Advances on investigation of chemical effects on the hydro-mechanical behavior of compacted bentonite
Weimin YE, **Puhuai LU**, **Qiong Wang**, **Yonggui Chen**
Tongji University, China, People's Republic of

2:50pm - 3:10pm
ID: 274 / PS #2: 002
Five years of evolution in the mineralogy and chemistry of Milos bentonite caused by a saline (Na-Ca-Cl) hydration front against a heat source
Jaime Fernando Cuevas[1], **María Victoria Villar**[2], **Andrés Idiart**[3], **Ana Melón**[2], **Ana Isabel Ruiz**[1], **Almudena Ortega**[1], **Heino Ville**[4]
[1]UAM, Madrid, Spain; [2]CIEMAT, Madrid, Spain; [3]Amphos 21 Consulting, S.L.; [4]POSIVA Oy, Finland

---

3:10pm - 3:30pm
ID: 345 / PS #2: 003
Kinetics of rehydration in smectites and bentonites
Karolina Rybka[1], **Artur Kuligiewicz**[1], **Stephan Kaufhold**[2], **Reiner Dohrman**[2,3], **Arkadiusz Derkowski**[1]
[1]Institute of Geological Sciences, Polish Academy of Sciences, Senacka 1, 31-002, Krakow, Poland; [2]BGR, Bundesanstalt für Geowissenschaften und Rohstoffe, Stilleweg 2, D-30655 Hannover, Germany; [3]LBEG, Landesamt für Bergbau, Energie und Geologie, Stilleweg 2, D-30655 Hannover, Germany

---

3:30pm - 3:50pm
ID: 188 / PS #2: 004
Cementation effect on one-dimensional swelling deformation property of bentonite ore
Daichi Ito, **Hailong Wang**, **Hideo Komine**
Waseda University, Japan

2:30pm - 3:50pm

PS #3: Radionuclide diffusion and sorption
Location: **Blauer Saal**
Session Chair: **Erika Anne Cornelia Neeft**, COVRA, Netherlands, The
Session Chair: **Thorsten Schäfer**, Friedrich-Schiller-Universität Jena, Germany

2:30pm - 2:50pm
ID: 417 / PS #3: 001

In-situ radionuclides diffusion experiment in a thermal gradient in the sandy facies of Opalinus Clay

Guillaume Pochet[1], David Jaeggi[2], Frank Heberling[3], Bastian Graupner[4], Will Bower[5], Guido Deissmann[6], Myriam Agnel[7], Fabiano Magri[8], Agnes Vinsot[7], Christoph Borkel[8], Carl Dietl[8], Frederic Bernier[1], Cedric Barroo[1], Maryna Surkova[1], Yuankai Yang[6], Sanduni Ratnayake[3], Vanessa Montoya[9]

[1]FANC, Brussels, Belgium; [2]Swisstopo, Wabern, Switzerland; [3]KIT, Karlsruhe, Germany; [4]ENSI, Brugg, Switzerland; [5]NWS, Cumbria, UK; [6]Forschungszentrum Juelich, Juelich, Germany; [7]ANDRA, Bure, France; [8]BASE, Berlin, Germany; [9]SCK CEN, Mol, Belgium

2:50pm - 3:10pm
ID: 311 / PS #3: 002

A batch and diffusion investigation of the mobility of selenide into the Callovo-oxfordian argillite

Sebastien SAVOYE[1], Nathalie COREAU[1], Serge LEFEVRE[1], Emilie THORY[1], Benoit MADE[2], Jean-Charles ROBINET[2], Romain DAGNELIE[1]

[1]Paris Saclay University, CEA, France; [2]Andra, France

3:10pm - 3:30pm
ID: 438 / PS #3: 003

DIFFUSION AND RETENTION OF DIVALENT TRANSITION METAL TRACERS IN COMPACTED ILLITE CONVERTED TO DIFFERENT CATIONIC FORMS

Dimitra Zerva[1,2], Martin Glaus[1], Sergey Churakov[1,2]

[1]Paul Scherrer Institute; [2]Univerisity of Bern

3:30pm - 3:50pm
ID: 272 / PS #3: 004

Predictive modelling of radionuclide sorption on Boom Clay

Delphine Durce[1], Lian Wang[1], Liesbeth Van Laer[1], Norbert Maes[1], Stephane Brassinnes[2]

[1]SCK CEN, Belgium; [2]ONDRAF/NIRAS, Belgium

3:50pm - 4:20pm

Coffee Break

Location: **In front of the lecture halls**

4:20pm - 6:00pm

PS #4: Repository projects and programmes

Location: **Roter Saal**
Session Chair: **Astrid Göbel**, BGE, Germany
Session Chair: **Shigeru Kubota**, Nuclear Waste Management Organization of Japan, Japan

4:20pm - 4:40pm
ID: 194 / PS #4: 001

BGR research on claystone in the Mont Terri rock laboratory

Jürgen Hesser, Gesa Ziefle
Federal Institute for Geosciences and Natural Resources, Germany

4:40pm - 5:00pm
ID: 198 / PS #4: 002

Nagra's post-closure safety case for the general license application

Olivier X Leupin[1], Ashley Brown[1], Valentyn Bykov[1], Nikitas Diomidis[1], Typhaine Guillemot[1], Priska Hunkeler[1], Hoda Javanmard[1], Thomas Kämpfer[2], Xiaoshuo Li[1], Paul Marschall[1], Lukas Martin[1], Alexandros Papafotiou[1], Martin Schoenball[1], Paul Smith[3], Raphael Wüst[1]

[1]Nagra, Switzerland; [2]Eastern Switzerland University of Applied Sciences; Oberseestrasse 10, 8640 Rap-perswil, Switzerland; [3]SAM-LTD, Switzerland

5:00pm - 5:20pm
ID: 429 / PS #4: 003

Demonstration testing program on backfill system for the post-closure phase of the French radioactive waste disposal

Youssef Fawaz[1], Rémi de La Vaissière[1], Jean Talandier[2], Jad Zghondi[1], Gilles Armand[1]

[1]Andra, Meuse/Haute-Marne Underground Research Laboratory, Bure, France; [2]Andra, Châtenay-Malabry, France

5:20pm - 5:40pm
ID: 357 / PS #4: 004

Design of concrete-based segmental liners for a potential German HLW/SF repository in claystone

Philipp Herold[1], Ajmal Gafoor[1], Eric Simo[1], David Seidel[1], Andreas Hucke[2], Sven Bock[2], Benedikt Wöhrl[2], Axel Studeny[2]

[1]BGE TECHNOLOGY GmbH, Germany; [2]DMT GmbH & Co. KG

5:40pm - 6:00pm
ID: 451 / PS #4: 005

Excavation of the Konrad 2 shaft landing station in a clay and marl claystone: numerical modelling of excavation and support measures

Mirko Polster[1], Lothar te Kamp[2], Michael Breustedt[3], Stephan Gehne[3]

[1]BGE Technology, Germany; [2]ITASCA, Gelsenkirchen, Germany; [3]BGE, Germany

4:20pm - 6:00pm

PS #5: Geological setting and clay host rock

Location: **Bonatz Saal**
Session Chair: **Simon Norris**, Nuclear Waste Services, United Kingdom
Session Chair: **Amade Halasz**, PURAM, Hungary

4:20pm - 4:40pm
ID: 281 / PS #5: 001

Hydrogeological model of northern Switzerland

Jens Becker[1], Jaouhar Kerrou[2], Ellen Milnes[2], Olivier Masset[2], Laurent Tacher[3], Nicolas Roy[1], Daniel Traber[1], Pierre Perrochet[2]

[1]Nagra, Switzerland; [2]CHYN, Uni Neuchatel, Switzerland; [3]Terreplus, Switzerland

4:40pm - 5:00pm
ID: 364 / PS #5: 002

Geotechnical clay core characterisation for deep geological disposal of radioactive waste in the Netherlands

Vidushi Toshniwal[1], Ties de Jong[1], Hemmo Abels[1], Wout Broere[1], Ana Maria Fernández[2], Michael A. Hicks[1], Dirk Munsterman[3], Erika Neeft[4], Philip J. Vardon[1], Anne-Catherine Dieudonné[1]
[1]Delft University of Technology, The Netherlands; [2]CIEMAT, Madrid, Spain; [3]TNO, Geological Survey of the Netherlands, Utrecht, The Netherlands; [4]COVRA, Nieuwdorp, The Netherlands

5:00pm - 5:20pm
ID: 296 / PS #5: 003
Calibrated clay formation characterization using multi-scale data, clustering and stochastic approaches
Serge Marnat[1], Jens Becker[2]
[1]Ad Terra Group, Geneva, Switzerland; [2]National Cooperative for the Disposal of Radioactive Waste (Nagra), Wettingen, Switzerland

5:20pm - 5:40pm
ID: 453 / PS #5: 004
Characterizing claystone with NMR logs as repository host rock.
Joachim Strobel
BGE, Germany

5:40pm - 6:00pm
ID: 252 / PS #5: 005
Self-Sealing of the Mont Terri Opalinus Clay Main Fault following a Mesoscale Activation Experiment
Yves Guglielmi[1], Christophe Nussbaum[2], Frédéric Cappa[3], Tanner Shadoan[4], Jonathan Ajo-Franklin[4], Florian Soom[1], Bill Lanyon[5], Paul Cook[1], Chet Hopp[1], Verónica Rodríguez Tribaldos[1], Michelle Robertson[1], Todd Wood[1], Senecio Schefer[2], Jens Birkholzer[1]
[1]Energy Geosciences Division, Lawrence Berkeley National Laboratory, Berkeley, California, USA; [2]Swiss Geological Survey, swisstopo, Wabern, Switzerland; [3]Université Côte d'Azur, CNRS, Observatoire de la Côte d'Azur, IRD, Géoazur, Sophia Antipolis, France; [4]Rice University, Dept. of Earth, Environmental, and Planetary Science, Houston, TX, USA; [5]Fracture Systems Ltd, Tregurrian, Ayr, St. Ives, Cornwall, UK

4:20pm - 6:00pm

PS #6: Clay-iron/-cement interaction
Location: **Blauer Saal**
Session Chair: **Reiner Dohrmann**, LBEG, Germany
Session Chair: **Mika Olavi Niskanen**, Posiva Oy, Finland

4:20pm - 4:40pm
ID: 352 / PS #6: 001
Preliminary study of iron-clay interactions in clay samples col-lected in the Kiirunavaara iron mine, Kiruna, northern Sweden
Satoru Suzuki[1], Tatsuya Fujimura[2], Kanya Kimura[2], Ryosuke Kikuchi[2], Takahiro Goto[1], Ulf B Andersson[3], Tsubasa Otake[2], Tsutomu Sato[2]
[1]Science and Technology Department, NUMO, Japan; [2]Hokkaido University, Japan; [3]LKAB, Kiruna, Sweden

4:40pm - 5:00pm
ID: 143 / PS #6: 002
The microbial community in bentonites B27 and GMZ and its in-fluence on cast iron corrosion
Sean Ting-Shyang Wei, Sindy Kluge, Paul Chekhonin, Vanessa Dykas, Cornelia Kaden, Nicole Matschiavelli
Helmholtz-Zentrum Dresden-Rossendorf, Germany

5:00pm - 5:20pm
ID: 176 / PS #6: 003
Modelling the evolution of a bentonite-cementitious backfilling grout for HLW disposal cell
Kevins Rhino[1], Nicolas Marty[1], Sylvain Grangeon[1], Nicolas Maubec[1], Catherine Lerouge[1], Esra Orucoglu[1], Mathieu Debure[1], Sebastien Jego[1], Nicolas Michau[2], Xavier Bourbon[2], Christelle Martin[2]
[1]BRGM, F-45060 Orléans, France; [2]Andra, 1/7 Rue Jean Monnet, 92298, Châtenay-Malabry CEDEX, France

5:20pm - 5:40pm
ID: 380 / PS #6: 004
Evolution upon contact with water of a bentonite-cement backfilling grout: insights from laboratory and in situ mineralogical characteriza-tions and from geochemical modelling
Sylvain Grangeon[1], Mathieu Debure[1], Valerie Montouillout[2], Erik Elkaïm[3], Catherine Lerouge[1], Nicolas Maubec[1], Nicolas Michau[4], Xavier Bourbon[4], Christelle Martin[4], Benoit Cochepin[4], Nicolas Marty[1]
[1]BRGM, F-45060 Orléans, France; [2]Conditions Extrêmes et Matériaux : Haute Température et Irradiation (CEMHTI), CNRS UPR 3079, 1D avenue de la Recherche Scientifique 45071 Orléans, France; [3]Synchrotron SOLEIL, L'Orme des Merisiers, Saint-Aubin 91190, France; [4]Andra, 1/7 Rue Jean Monnet, 92298, Châtenay-Malabry CEDEX, France

5:40pm - 6:00pm
ID: 200 / PS #6: 005
In-situ long-term interactions between different concrete formulas and COx claystone in a deep disposal context
Catherine Lerouge[1], Nicolas Maubec[1], Guillaume Wille[1], Christine Flehoc[1], Catherine Guerrot[1], Stéphane Gaboreau[1], Yannick Linard[2], Francis Claret[1]
[1]BRGM, France; [2]ANDRA, France

6:00pm - 8:00pm

Networking event / Get-together
Location: **Eilenriedehalle A**

Date: Tuesday, 26/Nov/2024

8:00am - 8:30am

Registration

8:30am - 10:00am

Plenary #2: Geochemistry
Location: **Eilenriedehalle B**
Session Chair: **Thorsten Schäfer**, Friedrich-Schiller-Universität Jena, Germany
Session Chair: **Erika Anne Cornelia Neeft**, COVRA, Netherlands, The

8:30am - 9:00am
ID: 144 / Plenary #2: 001
Porewater extraction techniques from clay-rich sedimentary rocks

Martin Mazurek[1], **Paul Wersin**[1], **Florian Eichinger**[2], **Adrian Bath**[3], **Tom Al**[4], **Ian D. Clark**[4], **Laura Kennell-Morrison**[5], **Niko Kampman**[6], **Daniel Traber**[7]
[1]University of Bern, Switzerland; [2]Hydroisotop GmbH, Schweitenkirchen, Germany; [3]Intellisci, Willoughby on the Wolds, UK; [4]University of Ottawa, Ottawa, Canada; [5]Nuclear Waste Management Organization, Toronto, Canada; [6]Nuclear Waste Services, Didcot, UK; [7]Nagra, Wettingen, Switzerland

9:00am - 9:20am
ID: 426 / Plenary #2: 002
Elucidating the fate of hydrogen by means of deuterium gas injections: an in-situ experiment in Opalinus Clay
Mélanie Lundy[1], **Christian Ostertag-Henning**[2], **Paul Königer**[2], **Stefan Wechner**[3], **Yanick Lettry**[4], **Myriam Agnel**[1], **Agnès Vinsot**[1]
[1]Andra, France; [2]BGR, Germany; [3]Hydroisotop GmbH, Germany; [4]Solexperts AG, Switzerland

9:20am - 9:40am
ID: 231 / Plenary #2: 003
Effect of nitrate on in situ Se(VI) reduction in Opalinus Clay
Nele Bleyen[1], **Katrien Hendrix**[1], **Kristel Mijnendonckx**[1], **Catherine Lerouge**[2], **Veerle Van Gompel**[1], **Jef Mathijs**[1], **Elie Valcke**[1]
[1]SCK CEN, Belgium; [2]BRGM, France

9:40am - 10:00am
ID: 147 / Plenary #2: 004
High-resolution, integrated, chemically consistent sorption and diffusion data for radionuclide transport models: Examples from Switzerland for site characterisation
Raphael Wuest[1], **Martin Glaus**[2], **Dmitrii Kulik**[2], **Luc Van Loon**[3], **Maria Marques Fernandes**[2], **Dan Miron**[2], **Olha Marinich**[2], **Jens Becker**[1], **Bart Baeyens**[3], **Xiaoshuo Li**[1]
[1]Nagra, Switzerland; [2]PSI Switzerland; [3]CWL Solutions, Switzerland

10:00am - 10:30am
Coffee Break
Location: **Eilenriedehalle A**

10:30am - 12:00pm
Plenary #3: High temperature effects
Location: **Eilenriedehalle B**
Session Chair: **Irina Gaus**, Nagra, Switzerland
Session Chair: **Reiner Dohrmann**, LBEG, Germany
Invited Keynote: Liange Zheng (Lawrence Berkeley National Lab, United States of America) "Understanding bentonite buffer under high temperature: modeling and tests"

10:30am - 11:00am
Invited Keynote
ID: 458 / Plenary #3: 001
Understanding bentonite buffer under high temperature: modeling and tests
Liange Zheng
Lawrence Berkeley National Lab, United States of America

11:00am - 11:20am
ID: 342 / Plenary #3: 002
Clays at elevated temperature – key results of EURAD HITEC WP
Markus Olin[1], **Dragan Grgic**[2], **Jiří Svoboda**[3]
[1]VTT Technical Research Centre of Finland Ltd, Espoo, Finland; [2]University of Lorraine, Nancy, France; [3]CTU in Prague, Prague, Czech Republic

11:20am - 11:40am
ID: 223 / Plenary #3: 003
Smectite alteration in ABM bentonites? New insights from layer charge measurements
Nadine J. Kanik[1], **Reiner Dohrmann**[2,3], **Stephan Kaufhold**[2], **Arkadiusz Derkowski**[1]
[1]Institute of Geological Sciences, PAS, Poland; [2]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany; [3]State Authority of Mining, Energy and Geology (LBEG), Hannover, Germany

11:40am - 12:00pm
ID: 137 / Plenary #3: 004
Heating load increase after 8 years of heating and related THM processes observed in the Full-Scale Emplacement (FE) experiment at Mont Terri
Berrak Firat Lüthi[1], **Dr. Raphael Schneeberger**[1], **Bill Lanyon**[2]
[1]Nagra, Switzerland; [2]Fracture Systems Ltd.

12:00pm - 12:30pm
2 min poster presentation #2
Location: **Eilenriedehalle B**

12:00pm - 12:02pm
2 min poster
ID: 2243
Unravelling the depositional model of the Opalinus Clay using grain-size variability
Géraldine Nicole Zimmerli[1], **Stephan Wohlwend**[2], **Gaudenz Deplazes**[3], **Thomas Mann**[4], **Anneleen Foubert**[1]
[1]Department of Geosciences, University of Fribourg, Fribourg, Switzerland; [2]Institute of Geological Sciences, University of Bern, Bern, Switzerland; [3]Nagra (National Cooperative for the Disposal of Radioactive Waste), Wettingen, Switzerland; [4]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany

12:02pm - 12:04pm
2 min poster
ID: 2385
3D Hydro-Mechanical modelling to support the design of the REG experiment in the Callovo-Oxfordian Claystone
Gilles Corman[1], **Abhishek Rawat**[1], **Jean Talandier**[2], **Rémi de La Vaissiere**[2], **Youssef Fawaz**[2], **Frédéric Collin**[1]
[1]University of Liège, Belgium; [2]Andra, France

12:04pm - 12:06pm
2 min poster
ID: 2245

Differentiation of fractures and rock mass deformation in clay rocks by Machine Learning

Rushan Wang[1,2], Andrea Manconi[1,2], Martin Ziegler[3]
[1]WSL Institute for Snow and Avalanche Research SLF; [2]Climate Change, Extremes and Natural Hazards in Alpine Regions Research Centre CERC; [3]Swiss Federal Office of Topography (swisstopo)

12:06pm - 12:08pm
2 min poster
ID: 2283

Mechanochemical activation of synthetic Na-n-micas – applications in retention of high-level radioactive waste

Aníbal López-Marín[1], Rosa Martín-Rodríguez[1,2], Fernando Aguado[2,3], Ana C. Perdigón[1,2]
[1]QUIPRE Department, University of Cantabria, Avda. Los Castros, 46, 39005, Santander, Spain.; [2]Nanomedicine Group, IDIVAL, Avda. Cardenal Herrera Oria s/n, 39011, Santander, Spain.; [3]CITIMAC Department, Universidad de Cantabria, Avda. Los Castros, 48, 39005, Santander, Spain.

12:08pm - 12:10pm
2 min poster
ID: 2318

Development of a separation method for Am-, Sr-, Pu- and U-isotopes in concrete using extraction chromatography

Gloria Steckholzer, Claudia Landstetter, Krystle Elbers, Rainer Kadan
AGES- Austrian Agency for Health and Food Safety, Austria

12:10pm - 12:12pm
2 min poster
ID: 2382

Neptunium migration in Opalinus Clay - one experiment with multiple numerical geochemical solutions

Theresa Hennig[1], Madlen Stockmann[2], Claudia Joseph[2], Vinzenz Brendler[3], Tobias Reich[4], Michael Kühn[1,5]
[1]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Potsdam, Germany; [2]Bundesgesellschaft für Endlagerung mbH (BGE), Peine, Germany; [3]Helmholtz Zentrum Dresden Rossendorf e.V., Institute of Resource Ecology, Dresden, Germany; [4]Johannes Gutenberg Universität Mainz, Department of Chemistry, Mainz, Germany; [5]University of Potsdam, Institute of Geosciences, Potsdam, Germany

12:12pm - 12:14pm
2 min poster
ID: 2138

Harnessing microbial processes consuming hydrogen in radioac-tive waste repositories

Camille Rolland[1], Olivier Leupin[2], Rizlan Bernier-Latmani[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL) Environmental Microbiology Labo-ratory, CH-1015 Lausanne, Switzerland; [2]National Cooperative for the Disposal of Radioactive Waste CH-5430, Wettingen, Switzerland

12:14pm - 12:16pm
2 min poster
ID: 2233

Current status of the in-situ interaction experiment at the Bukov URF

Anna Golubko[1], Jan Smutek[1], Jiří Svoboda[2]
[1]Radioactive Waste Repository Authority - SÚRAO, Czech Republic; [2]Czech Technical University in Prague, Czech Republic

12:16pm - 12:18pm
2 min poster
ID: 2341

3D Modelling of Coupled Hydro-Mechanical Processes in Fractured Opalinus Clay Shale

Muhammad Raharsya Andiva[1], Qinghua Lei[1], Martin Ziegler[2]
[1]Department of Earth Sciences, Uppsala University, Uppsala, Sweden; [2]Federal Office of Topography (swisstopo), Mont Terri URL, St-Ursanne, Switzerland

12:30pm - 1:30pm

Lunch Break

Location: **Eilenriedehalle A**

1:30pm - 2:30pm

Poster exhibition #2

Location: **Eilenriedehalle A**

ID: 182

Microstructural Examination of Gas Migration Influence in Heterogeneous Pellet/Powder Bentonite Mixtures Using X-ray Computed Micro-Tomography

Mohammed ZAIDI, Nadia MOKNI, Magdalena DYMITROWSKA, Kui LIU
Institut de Radioprotection et de Sûreté Nucléaire (IRSN), PSE-ENV/SPDR/LETIS, Fontenay-aux-Roses, F-92260, France

Appl. Poster Award
ID: 133

Suitability investigations of Lithuanian clay formations for the deep geological repository of radioactive wastes

Roma Kanopiene
Lithuanian geological survey, Lithuania

ID: 356

Modelling of unsaturated homogenisation with an enhanced bentonite material model using COMSOL Multiphysics

Alex Spetz, Ola Kristensson, Daniel Malmberg
Clay Technology, Sweden

ID: 165

CEC as quality proof for smectitic phases in lower Cretaceous clay rocks – illite-smectite ± pure smectite?

Reiner Dohrmann[1,2], Kristian Ufer[1], Tilo Kneuker[1], Jochen Erbacher[1,2], André Bornemann[1]
[1]BGR, Germany; [2]LBEG, Germany

ID: 170

Multi-scale 2D and 3D characterisation for enhanced understanding of UK lower strength sedimentary rocks.

Kevin G Taylor, Lin Ma, Holly Mills, Xin Zhong, Ke Wang
University of Manchester, United Kingdom

Appl. Poster Award
ID: 243
Unravelling the depositional model of the Opalinus Clay using grain-size variability
Géraldine Nicole Zimmerli[1], Stephan Wohlwend[2], Gaudenz Deplazes[3], Thomas Mann[4], Anneleen Foubert[1]
[1]Department of Geosciences, University of Fribourg, Fribourg, Switzerland; [2]Institute of Geological Sciences, University of Bern, Bern, Switzerland; [3]Nagra (National Cooperative for the Disposal of Radioactive Waste), Wettingen, Switzerland; [4]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany

ID: 253
Influence of texture on the chloride accessible porosity fraction explored by SEM and µCT data
Carmen Andrea Zwahlen[1], Thomas Gimmi[1,2], Andreas Jenni[1], Martin Mazurek[1], Daniel Traber[3], Raphael Wüst[3]
[1]University of Bern, Switzerland; [2]Paul Scherrer Institut, Switzerland; [3]Nagra, Switzerland

ID: 308
Exploring the dynamics of aquifer - aquitard systems: new insights from 81Kr model ages
Daniel Traber[1], Nicolas Roy[1], Emiliano Stopelli[1], Michael Heidinger[2], Florian Eichinger[2], Christoph Wanner[3], Thomas Gimmi[3], H. Niklaus Waber[4], Jin Ma[3]
[1]Nagra, Wettingen, Switzerland; [2]Hydroisotop GmbH, Schweitenkirchen, Germany; [3]University of Bern, Bern, Switzerland; [4]WaterGeoChem Consulting, Bern, Switzerland

ID: 344
Mont Terri BIM — Project overview and technical realisation
Martin Ziegler[1], Senecio Schefer[1], Stefan Volken[2]
[1]Swiss Federal Office of Topography (swisstopo), St-Ursanne, Switzerland; [2]Swiss Federal Office of Topography (swisstopo), Wabern, Switzerland

ID: 425
Geochemistry and pore water in the lower confining units of the Opalinus Clay at Mont Terri Rock Laboratory (Switzerland)
Ana María Fernández[1], Catherine Lerouge[2], Francisco Javier León[1], Paula Nieto[1], David Jaeggi[3], Michael Kühn[4]
[1]CIEMAT, Spain; [2]BRGM, France; [3]Swisstopo, Switzeland; [4]Helmholtz-Zentrum Potsdam, Germany

ID: 328
Underground storage of high-grade radioactive waste in mudrock: In search of the Holy Grail
Laurence Warr, Georg Grathoff
University of Greifswald, Germany

ID: 131
Development and Emplacement of an Annular Grout Envisaged for HLW Emplacement Drifts to Study Long-Term Interaction with Opalinus Clay
Lukas Martin[1], Wolfgang Seidl[2], Sebastian Kernbichl[2], Nicole Wieser[2], René Bolliger[3], Julien Bizzozero[3]
[1]Nagra, Switzerland; [2]Master Builders Solutions Deutschland GmbH, Trostberg, Germany; [3]Master Builders Solutions Schweiz AG, Holderbank, Switzerland

ID: 292
Monitoring fluid movement and swelling pressure development in semi-technical scale Sandwich sealing system experiments
Martin Hofmann[1], Eleanor Bakker[2], Franz Königer[3], Thomas Nagel[1], Rainer Schuhmann[3], Katja Emmerich[2]
[1]TU Bergakademie Freiberg, Germany; [2]Karlsruhe Institute of Technology, Germany; [3]ISU mbH, Germany

Appl. Poster Award
ID: 385
3D Hydro-Mechanical modelling to support the design of the REG experiment in the Callovo-Oxfordian Claystone
Gilles Corman[1], Abhishek Rawat[1], Jean Talandier[2], Rémi de La Vaissiere[2], Youssef Fawaz[2], Frédéric Collin[1]
[1]University of Liège, Belgium; [2]Andra, France

ID: 186
Development of Boron-Enhanced Metakaolin-Based Geopolymers for the Immobilisation of Radioactive Debris with the potential of Neutron Absorption
Xiaobo Niu, Yogarajah Elakneswaran, Ryosuke Kikuchi
Hokkaido University, Japan

Appl. Poster Award
ID: 205
Performance of MoxOy pH sensor prepared by thermal oxidation for the long term monitoring of nuclear waste disposals
Djouhar AOUBIDA[1,3], Stéphanie BETELU[1], Johan BERTRAND[2], quoc-nghi PHAM[3], Nita DRAGOE[3], Ioannis IGNATIADIS[1]
[1]BRGM (French Geological Survey), Orleans, France; [2]ANDRA (French national radioactive waste management agency), Châtenay-Malabry, France; [3]ICMMO (Institute of Molecular Chemistry and Materials), Orsay, France

ID: 1464
Cation exchange capacity measurement for bentonite-cement reactions in a nuclear waste disposal - what are we really measuring?
Arkadiusz Derkowski[1], Adam Zięba[1], Reiner Dohrmann[2,3], Stephan Kaufhold[3]
[1]Institute of Geological Sciences, Polish Academy of Sciences, Krakow, Poland; [2]tate Authority for Mining, Energy and Geology (LBEG), Hannover, Germany; [3]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany

Appl. Poster Award
ID: 441

Influence of microstructure and pore saturation in measuring corro-sion rates of a carbon steel API 5L X65 in contact with cement grout in future nuclear waste disposal program

Yendoube Charles SANO MOYEME[1], Stéphanie BETELU[1], Johan BERTRAND[2], Stéphane GABOREAU[1], Karine GROENEN-SERRANO[3]
[1]BRGM, France; [2]ANDRA, France; [3]LGC, France

Appl. Poster Award
ID: 245

Differentiation of fractures and rock mass deformation in clay rocks by Machine Learning

Rushan Wang[1,2], Andrea Manconi[1,2], Martin Ziegler[3]
[1]WSL Institute for Snow and Avalanche Research SLF; [2]Climate Change, Extremes and Natural Hazards in Alpine Regions Research Centre CERC; [3]Swiss Federal Office of Topography (swisstopo)

ID: 400

Large-scale reactive transport simulations of uranium migration in Opalinus Clay accelerated by means of surrogate models

Marco De Lucia[1], Max Lübke[2], Theresa Hennig[1], Bettina Schnor[2]
[1]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Potsdam, Germany; [2]University of Potsdam, Institute of Computer Science, Potsdam, Germany

ID: 109

Measurement of pore water density in a bentonite using decalin

Hailong Wang
Waseda University, Japan

ID: 145

Development of test specimens for evaluating permeability measurements of tight rocks

Carlo Dietl
Federal Office for the Safety of Nuclear Waste Management (BASE), Germany

ID: 163

CP1 and Tribicarb-3D: unique long term and large scale in situ migration tests in Boom Clay at the HADES Underground Research Laboratory

Marc Aertsens[1], Eef Weetjens[1], Joan Govaerts[1], Norbert Maes[1], Stéphane Brassinnes[2]
[1]SCK CEN, Belgium; [2]ONDRAF/NIRAS, Belgium

ID: 266

EFFECT OF REDOX STATE ON THE REDOX SENSITIVE ELEMENT RETENTION BY APTIAN SANDS

Esra Orucoglu[1], Sylvain Grangeon[1], Myriam Agnel[2], Benoît Madé[3], Mathieu Debure[1]
[1]BRGM, Orléans, France; [2]ANDRA, Centre de Meuse/Haute-Marne, Bure, France; [3]ANDRA, R&D Division, Châtenay-Malabry, France

Appl. Poster Award
ID: 283

Mechanochemical activation of synthetic Na-n-micas – applications in retention of high-level radioactive waste

Aníbal López-Marín[1], Rosa Martín-Rodríguez[1,2], Fernando Aguado[2,3], Ana C. Perdigón[1,2]
[1]QUIPRE Department, University of Cantabria, Avda. Los Castros, 46, 39005, Santander, Spain.; [2]Nanomedicine Group, IDIVAL, Avda. Cardenal Herrera Oria s/n, 39011, Santander, Spain.; [3]CITIMAC Department, Universidad de Cantabria, Avda. Los Castros, 48, 39005, Santander, Spain.

Appl. Poster Award
ID: 318

Development of a separation method for Am-, Sr-, Pu- and U-isotopes in concrete using extraction chromatography

Gloria Steckholzer, Claudia Landstetter, Krystle Elbers, Rainer Kadan
AGES- Austrian Agency for Health and Food Safety, Austria

ID: 332

Migration behaviour of Ra-226 in the sandy facies of Opalinus Clay

Naila Ait-Mouheb[1], Victor Vinograd Vinograd[1], Martina Klinkenberg[1], Jenna Poonoosamy[1], Guido Deissmann[1], Luc R. Van Loon[2], Dirk Bosbach[1]
[1]Institute of Energy and Climate Research – Nuclear Waste Management (IEK-6), Forschungszentrum Jülich GmbH, 52428 Jülich, Germany; [2]Laboratory for Waste Management, Paul Scherrer Institut, CH-5232 Villigen PSI, Switzerland

ID: 405

Donnan equilibrium in compacted bentonite

Magnus Hedström[1], Ya-Wen Hsiao[2]
[1]Clay Technology, Sweden; [2]Hartree Centre, STFC Daresbury Laboratory, Daresbury WA4 4AD, UK

Appl. Poster Award
ID: 382

Neptunium migration in Opalinus Clay - one experiment with multiple numerical geochemical solutions

Theresa Hennig[1], Madlen Stockmann[2], Claudia Joseph[2], Vinzenz Brendler[3], Tobias Reich[4], Michael Kühn[1,5]
[1]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Potsdam, Germany; [2]Bundesgesellschaft für Endlagerung mbH (BGE), Peine, Germany; [3]Helmholtz Zentrum Dresden Rossendorf e.V., Institute of Resource Ecology, Dresden, Germany; [4]Johannes Gutenberg Universität Mainz, Department of Chemistry, Mainz, Germany; [5]University of Potsdam, Institute of Geosciences, Potsdam, Germany

ID: 407

Effective diffusivity prediction by considering multivariable regression and rock properties

Nikolaos Prasianakis[1], Romana Boiger[1], Georg Kosakowski[1], Raphael Wüst[2], Sergey Churakov[1,3]

[1]Laboratory for Waste Management, Paul Scherrer Institute, CH-5232 Villigen, Switzerland; [2]Nagra, Wettingen, Switzerland; [3]University of Bern, Institute of Geological Sciences, CH-3012 Bern, Switzerland

ID: 179

Successful gas tests at the GAs permeable Seal Test (GAST) - Highlights and lessons learned (Grimsel Test Site, CH)

Emiliano Stopelli[1], Thomas Spillmann[1], Bill Lanyon[2], Rémi de La Vaissière[3], Jean Talandier[3], Jeremy Chen[4], Simon Norris[5], Stratis Vomvoris[1], Irina Gaus[1], Florian Kober[1]

[1]Nagra, Switzerland; [2]Fracture Systems Ltd, United Kingdom; [3]ANDRA, France; [4]NWMO, Canada; [5]NWS, United Kingdom

Appl. Poster Award

ID: 138

Harnessing microbial processes consuming hydrogen in radioac-tive waste repositories

Camille Rolland[1], Olivier Leupin[2], Rizlan Bernier-Latmani[1]

[1]École Polytechnique Fédérale de Lausanne (EPFL) Environmental Microbiology Labo-ratory, CH-1015 Lausanne, Switzerland; [2]National Cooperative for the Disposal of Radioactive Waste CH-5430, Wettingen, Switzerland

ID: 234

Geochemical processes in a repository with clay barriers at high saline conditions

Claudia Joseph

Bundesgesellschaft für Endlagerung, Germany

ID: 321

Cement-Bentonite Interaction with Different Cement Materials at Elevated Temperatures 2: Modeling

Sohtaro ANRAKU[1], Ryohei KAWAKITA[1], Yuji HANAMACHI[2], Seiichiro MITSUI[1], Hiroshi SASAMOTO[1], Morihiro MIHARA[1]

[1]Japan Atomic Energy Agency (JAEA), Japan; [2]QJ Science Ltd., Japan

ID: 127

Comparison of different iron/bentonite exhibition tests and effect of the type of exchangeable cation on corrosion products

Stephan Kaufhold[1], Kristian Ufer[1], Reiner Dohrmann[2], Franz Renz[3], Rene Lucka[3], Maximilian Kilic[3]

[1]BGR, Germany; [2]LBEG; [3]LUH

ID: 424

Sulfide Transport Through MX-80 Bentonite Under Various Geochemical Conditions

Magdalena Krol[1], Farhana Chowdhury[1], Sifat Papry[1], Md Abullah Asad[1], Pulin Mondal[1], Tarek Rashwan[2], Ian Molnar[3], Mehran Behazin[4], Peter Keech[4]

[1]Department of Civil Engineering, Lassonde School of Engineering, York University, Toronto, Canada; [2]Department of Engineering and Innovation, The Open University (UK), Milton Keynes, England, United Kingdom; [3]School of Geosciences, University of Edinburgh, Edinburgh, Scotland, United Kingdom; [4]Nuclear Waste Management Organization, Toronto, ON, Canada

ID: 241

Concrete-clay interaction – a systematic review and modelling study

Marcelo Laviña[1], Andrés Idiart[1], Olga Riba[1], Fidel Grandia[1], Nicolas Michau[2], Xavier Bourbon[2], Benoit Cochepin[2]

[1]Amphos 21 Consulting SL, Spain; [2]Andra, France

Appl. Poster Award

ID: 258

Studying the reactive transport of CO2 in Opalinus Clay with experimental and numerical analyses

Shuang Chen[1], Christian Ostertag-Henning[1], Vinay Kumar[1], Haibing Shao[2], Gesa Ziefle[1], Jobst Maßmann[1]

[1]Federal Institute for Geosciences and Natural Resources, BGR, Germany; [2]Department of Environmental Informatics, Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany

ID: 284

Exchangeable and soluble ion populations in semi-technical scale Sandwich sealing system experiments

Eleanor Bakker[1], Martin Hofmann[2], Thomas Nagel[2], Franz Königer[3], Rainer Schuhmann[3], Katja Emmerich[1]

[1]Institut für Massivbau und Baustofftechnologie (IMB/MPA/CMM), Karlsruhe Institute of Technology, Karlsruhe, Germany; [2]Institut für Geotechnik, TU Bergakademie Freiberg, Germany; [3]Ingenieur-Gesellschaft für Sensorik in der Umwelttechnik mbH (ISU), Karlsruhe, Germany

ID: 309

Delving into Bentonite Sedimentation Dynamics

Macarena Leal Olloqui[1], Daniel Svensson[1], Heikki Laitinen[1], Kenji Ishii[2], Patrik Sellin[1]

[1]SKB (Svensk Kärnbränslehantering AB), Oskarshamn, Sweden; [2]Kajima Corporation, Tokyo, Japan

ID: 384

Leaching kinetics of metakaolin in alkaline solution

Ryosuke Kikuchi, Xiaobo Niu, Yogarajah Elakneswaran

Hokkaido University, Japan

ID: 444

Reactive transport model of the long-term geochemical evolution in the near field of a HLW repository at the disposal cell scale: sensitivi-ties, variants and model simplifications

Javier Samper, Alba Mon, Luis Montenegro

Universidad de A Coruña, Spain

ID: 450

MINFF: A new classical forcefield for (clay-)minerals

Michael Holmboe

Umeå University, Sweden

ID: 202

Five-year laboratory tests of thermo-hydro-mechanical-chemical evolution of compacted bentonite: an experimental and modelling study

María Victoria Villar[1], Andrés Idiart[2], Emilie Coene[2], Jaime Cuevas[3], Ana María Melón[1], Ana Isabel Ruiz[3], Almudena Ortega[3], Rubén Iglesias[1], Ville Heino[4]
[1]CIEMAT, Spain; [2]Amphos 21 Consulting S.L., Spain; [3]UAM, Spain; [4]POSIVA, Finland

---

ID: 141

Deriving a Method for Host Rock specific Temperature Compatibility: Clay Rock

Kim-Marisa Mayer, Oliver Czaikowski, Bernd Förster, Matthias Hinze, Artur Meleshyn, Marvin Middelhoff, André Rübel, Klaus Wieczorek, Jens Wolf
Gesellschaft für Anlagen- und Reaktorsicherheit, Germany

ID: 251

Influence of temperature on the self-sealing of fractures in the Callovo-Oxfordian claystone

Mensan AGBOLI, Dragan GRGIC, Mohamed MOUMNI
University of Lorraine-CNRS, France

ID: 320

Conclusions on the post-yield behaviour of Opalinus claystone from multistage triaxial tests

Eleni Gerolymatou[1], Martin Kracht[2], Maximiliano Vergara[3]
[1]TU Clausthal, Germany; [2]gbm Gesellschaft für Baugeologie und -meßtechnik mbH - Baugrundinstitut, Ettlingen, Germany; [3]Skava Consulting, Salzburg, Austria

---

Appl. Poster Award
ID: 372

Effect of pore water salinity on the tensile strength of Boom Clay

Ties de Jong, Bhini Chandan Malagar, Philip J. Vardon, Anne-Catherine Dieudonné
Delft University of Technology, Delft, The Netherlands

Appl. Poster Award
ID: 394

THM-Modelling of the ALC1605 in situ heating experiment in Cal-lovo-Oxfordian clay formation

Eric Simo[1,2], David Seidel[1], Thomas Nagel[2], Alexandru Tatomir[5], Miguel Mánica[4], Jörg Buchwald[3], Dmitri Naumov[3]
[1]BGE TECHNOLOGY GmbH, Peine, Germany; [2]Geotechnical Institute, TU Bergakademie Freiberg, Freiberg, Germany; [3]Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany; [4]Institute of Engineering, National Autonomous University of Mexico, Mexico City, Mexico; [5]BGE, Peine, Germany

---

ID: 212

Open-source implementation of a transversely isotropic elasto-visco-plastic damage model for clay shales in MFront and OpenGeoSys

Mehran Ghasabeh[1], Kavan Khaledi[2], Bastian Graupner[3], Florian Amann[2,4], Thomas Nagel[1]
[1]Chair of Soil Mechanics and Foundation Engineering, Geotechnical Institute, TU Bergakademie Freiberg, Germany; [2]Fraunhofer Research Institution for Energy Infrastructure and Geothermal Systems IEG, Competence Center Geomechanics and Georisks, Aachen, Germany; [3]Swiss Federal Nuclear Safety Inspectorate (ENSI), Brugg, Switzerland; [4]Chair of Engineering Geology and Hydrogeology, RWTH Aachen, Germany

---

Appl. Poster Award
ID: 216

Numerical simulation of bentonite saturation at different temperatures

Larissa Friedenberg, Artur Meleshyn, Matthias Hinze
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany

---

Appl. Poster Award
ID: 187

Temperature history effect on swelling pressure of Kunigel-V1 bentonite cured in confined condition

Kunlin RUAN
Waseda University, Japan

ID: 208

Evolution of gases in an unsaturated bentonite buffer

Mattias Åkesson, Heikki Laitinen, Patrik Sellin
SKB, Sweden

ID: 214

Changes in swelling and hydrological characteristics of compacted bentonite by heating at 200 °C

Yasutaka Watanabe[1], Ema Yoshikawa[1], Misato Shimbashi[1], Shingo Yokoyama[1], Takahiro Goto[2], Yoichi Yamamoto[2]
[1]Central Research Institute of Electric Power Industry, Japan; [2]Nuclear Waste Management Organization of Japan, Japan

---

Appl. Poster Award
ID: 233

Current status of the in-situ interaction experiment at the Bukov URF

Anna Golubko[1], Jan Smutek[1], Jiří Svoboda[2]
[1]Radioactive Waste Repository Authority - SÚRAO, Czech Republic; [2]Czech Technical University in Prague, Czech Republic

---

ID: 269

Sampling, Measurements and Analysis of the Clay Barriers in the Prototype Repository at Äspö HRL

Magnus Kronberg[1], Patrik Sellin[1], Daniel Svensson[1], Fredrik Vahlund[1], Torbjörn Sandén[2]
[1]SKB, Swedish Nuclear Fuel and Waste Management Company; [2]Clay Technology

---

Appl. Poster Award
ID: 303

Investigating thermal coupling in a bentonite buffer

Stamatina Alexandropoulou[1], Lidija Zdravkovic[1], David Potts[1], Matthew Kirby[2], Simon Norris[2]
[1]Imperial College London, United Kingdom; [2]Nuclear Waste Services, United Kingdom

Appl. Poster Award
ID: 1462
Research into the Impact of Non-homogeneity on the Integrity of Bentonite Materials
Markéta Kučerová, Jiří Svoboda
Czech Technical University in Prague, Czech Republic

ID: 401
TH-Modelling for the in-situ HotBENT experiment at the Grimsel Test Site
Victoria Burlaka[1], Eric Simo[1,2], Tymofiy Gerasimov[1], David Seidel[1], Thomas Nagel[2], Christoph Lehmann[3], Jörg Buchwald[3], Dmitry Naumov[3], Alexandru Tatomir[4]
[1]BGE TECHNOLOGY GmbH, Germany; [2]Geotechnical Institute, TU Bergakademie Freiberg; [3]Helmholtz Centre for Environmental Research – UFZ; [4]BGE mbH, Federal Company for Radioactive Waste Disposal

ID: 123
Influence of sand mixture on gas pressure for bentonite
Tomoyoshi Nishimura
Ashikaga University, Japan

ID: 369
Changing of axial strains in creep performance for bentonite-sand mixture
Tomoyoshi Nishimura
Ashikaga University, Japan

ID: 262
Cation exchange simulation in Wyoming-type bentonite considering mechanical issues
Xavier Pintado[1], Rubén López-Vizcaíno[2], Ángel Yustres[2], Vicente Navarro[2], Laura Asensio[2], Sirpa Kumpulainen[1], Mika Niskanen[3]
[1]Mitta Engineering Oy, Finland; [2]Universidad de Castilla-La Mancha, Spain; [3]Posiva Oy, Finland

Appl. Poster Award
ID: 391
Benchmarking of Double-Structure Models for the Numerical Simulation of Swelling Clays
Christian B. Silbermann[1], Matthias Hinze[2], Larissa Friedenberg[2], Philipp Schädle[3], Markus Knauth[4], Thomas Nagel[1]
[1]Geotechnical Institute, TU Bergakademie Freiberg, Germany; [2]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Braunschweig, Germany; [3]Swiss Federal Nuclear Safety Inspectorate (ENSI), Brugg, Switzerland; [4]Institut für Gebirgsmechanik GmbH, Leipzig, Germany

Appl. Poster Award
ID: 341
3D Modelling of Coupled Hydro-Mechanical Processes in Fractured Opalinus Clay Shale
Muhammad Raharsya Andiva[1], Qinghua Lei[1], Martin Ziegler[2]
[1]Department of Earth Sciences, Uppsala University, Uppsala, Sweden; [2]Federal Office of Topography (swisstopo), Mont Terri URL, St-Ursanne, Switzerland

ID: 116
Impact of desaturation on the diffusion of gases in clay-based samples
Elke Jacops[1], Aadithya Gowrishankar[1,2], Norbert Maes[1,2], Pieter Verboven[2], Hans Janssen[2]
[1]SCK CEN, Belgium; [2]KU Leuven, Belgium

ID: 136
Young's modulus in claystones – adding complexity, reducing uncertainty
Sandra Schumacher, Werner Gräsle
Federal Institute for Geosciences and Natural Resources, Germany

Appl. Poster Award
ID: 160
Gas breakthrough simulation using bimodal porosity and mul-tiscale approach
Eike Radeisen[1,3], Hua Shao[1], Jürgen Hesser[1], Michael Pitz[1,4], Wenqing Wang[2], Olaf Kolditz[2,3]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]Helmholtz Center for Environmental Research (UFZ), Germany; [3]Dresden University of Technology (TUD), Germany; [4]Technische Universität Bergakademie Freiberg (TUBAF), Germany

ID: 250
Development of a two-phase hysteretic model accounting for water and gas entry pressure for evaluating hysteretic hydrodynamic properties of clay-based materials in a deep geological repository for radioactive waste
Zakaria Saâdi
Institut de Radioprotection et de Sûreté Nucléaire (IRSN), France

ID: 371
Testing device for the visualisation of gas-driven cracks in clays
Joaquín Liaudat, Philip J. Vardon, Michael A. Hicks, Anne-Catherine Dieudonné
Delft University of Technology, The Netherlands

ID: 387
Erosion of compacted bentonite at elevated temperature
Majid Sedighi, Ziheng Wang, Linhau He, Huaxiang Yan, Mojgan Hadi Mosleh, Andrey Jivkov
The University of Manchester, United Kingdom

Appl. Poster Award
ID: 412
Observations and Quantification of Gas Flow in Sand-Bentonite Mixtures using Analogue Tests
Elliot James Muir Bird, Robert Cuss, Phil Neep
British Geological Survey, United Kingdom

ID: 178

FE-G: 10 years of gas dynamics observations at the Full-Scale Emplacement experiment (Opalinus Clay, Mont Terri, CH)

Emiliano Stopelli[1], Typhaine Guillemot[1], Myriam Agnel[2], Scott Briggs[3], Fraser King[4], Rolf Kipfer[5], Simon Norris[6], Nikitas Diomidis[1], Irina Gaus[1], Raphael Schneeberger[1]
[1]Nagra, Switzerland; [2]ANDRA, France; [3]NWMO, Canada; [4]ICC Ltd, Canada; [5]Eawag, Switzerland; [6]NWS, United Kingdom

ID: 159

14 years long Gas Experiment in borehole PAC1011 at ANDRA's Un-derground Research Laboratory: Modelling the injection and transport of an Argon/Helium gas mixture in the Callovo-Oxfordian Claystone under in situ conditions

Nicolas Barret[1], Jean Croisé[2], Agnès Vinsot[3], Myriam Agnel[3], Rémi de La Vaissière[3]
[1]INTERA, France; [2]INTERA, Switzerland; [3]ANDRA, France

2:30pm - 3:50pm

PS #7: Mineralogical and hydrogeochemical characteristics

Location: **Roter Saal**
Session Chair: **Christophe Tournassat**, Universtité d'Orléans (France) / Lawrence Berkeley National Laboratory (USA), France
Session Chair: **Johanna Lippmann-Pipke**, Bundesanstalt für Geowissenschaften und Rohstoffe, BGR, Germany

2:30pm - 2:50pm
ID: 134 / PS #7: 001

Which porosity domains in clay-rich rocks are sampled by squeezing and advective displacement tests?

Mirjam Kiczka[1], Martin Mazurek[1], Andreas Jenni[1], Carmen Zwahlen[1], Lukas Aschwanden[1], Urs Mäder[2], Daniel Traber[3]
[1]University of Bern, Switzerland; [2]Rock Water Consulting, Boll, Switzerland; [3]Nagra, Wetting, Switzerland

2:50pm - 3:10pm
ID: 329 / PS #7: 002

Oxygen isotope exchange between groundwater and calcite unravels million-year long hydrogeochemical evolution of a deep sedimentary aquifer

Christoph Wanner[1], Lukas Aschwanden[1], Mirjam Kiczka[1], Daniel Traber[2]
[1]University of Bern, Switzerland; [2]NAGRA

3:10pm - 3:30pm
ID: 414 / PS #7: 003

Ab initio MD modelling of Ni2+, Zn2+, and Lu3+ cation adsorption on saponite edge surfaces

Vasyl Stotskyi[1,2], Fulvio Di Lorenzo[1,2], Maria Marques Fernandes[1], Matthias Krack[1], Andreas C. Scheinost[3,4], Martine Lanson[5], Bruno Lanson[5], Sergey V. Churakov[1,2]
[1]Paul Scherrer institute, Switzerland; [2]University of Bern; [3]3 Helmholtz-Zentrum Dresden-Rosendorf (HZDR), Insitute of Resource Ecology; [4]The Rossendorf Beamline (ROBL), European Synchrotron Radiation Fascility (ESRF); [5]Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, IRD, Univ. Gustave Eiffel, ISTerre

3:30pm - 3:50pm
ID: 449 / PS #7: 004

A XAS study on the effect of ionizing radiation on the redox state of the structural iron in Bentonite clay

Nathan Lavauzelle[1], Mats Jonsson[2], Michael Holmboe[1]
[1]Umeå University, Sweden; [2]KTH, Sweden

2:30pm - 3:50pm

PS #8: THM heater experiments

Location: **Bonatz Saal**
Session Chair: **Patrik Sellin**, SKB, Sweden
Session Chair: **Weimin YE**, Tongji University, China, People's Republic of

2:30pm - 2:50pm
ID: 335 / PS #8: 001

Dismantling of the Mock-Up-Josef in-situ experiment after 10 years of operation – Comprehensive analysis of the bentonite barrier

Radek Vašíček[1], Šárka Šachlová[2], Jana Steinová[3], Irena Hanusová[4], Michaela Matulová[5], Jiří Svoboda[1], Markéta Kučerová[1], Kateřina Černochová[1], Vlastislav Kašpar[2], Milan Zuna[2], Petr Večerník[2], Karol Kočan[2], Kateřina Černá[4], Miroslava Mecová[5]
[1]Czech Technical University in Prague, Faculty of Civil Engineering, Czech Republic; [2]ÚJV Řež, a. s., Radioactive waste and decommissioning, Husinec Řež, Czech Republic; [3]Technical University of Liberec, Institute for Nanomaterials, Advanced Technologies and Innovations, Czech Republic; [4]National Radiation Protection Institute (SÚRO), Prague, Czech Republic; [5]Radioactive Waste Repository Authority, Prague (SÚRAO), Czech Republic

2:50pm - 3:10pm
ID: 220 / PS #8: 002

The LOT S2 and A3 experiments at Äspö hard rock laboratory, Sweden – impact on bentonite performance after 20 years of heat-ing at 90 and 130°C

Daniel Svensson[1], Terese Bladström[1], Torbjörn Sandén[2], Patrik Sellin[1]
[1]Department of Research and Safety Assessment, Swedish Nuclear Fuel and Waste Management Co (SKB), Äspö Hard Rock Laboratory; [2]Clay Technology AB, Lund, Sweden.

3:10pm - 3:30pm
ID: 282 / PS #8: 003

THM modelling for HotBENT experiment using the water retention curve assumed by Bayesian inference

Shin Sato[1], Tomoyuki Shimura[1], Florian Kober[2]
[1]Obayashi corporation, Japan; [2]Nagra, Switzerland

3:30pm - 3:50pm
ID: 183 / PS #8: 004

Elastic-viscoplastic modelling of the PRACLAY large-scale in situ heater test

Guillaume Flood-Page[1], Arnaud Dizier[1], Temenuga Georgieva[1], Mieke De Craen[1], Séverine Levasseur[2]
[1]EURIDICE, Mol, Belgium; [2]ONDRAF/NIRAS, Brussels, Belgium

2:30pm - 3:50pm

PS #9: THM modelling

Location: **Blauer Saal**
Session Chair: **Wolfram Rühaak**, BGE Bundesgesellschaft für Endlagerung mbH, Germany
Session Chair: **Olaf Kolditz**, Helmholtz-Zentrum für Umweltforschung GmbH UFZ, Germany

2:30pm - 2:50pm
ID: 316 / PS #9: 001

The International DECOVALEX Initiative - Building Confidence Via Model Comparison

Jens Birkholzer[1], Alex Bond[2], LianGe Zheng[1]
[1]Lawrence Berkeley National Laboratory, United States of America; [2]Quintessa Ltd., United Kingdom

2:50pm - 3:10pm
ID: 169 / PS #9: 002

Numerical modelling of heating induced cracking process by phase-field method considering thermo-hydromechanical coupling

Zhan YU[1], Jianfu SHAO[1], Minh-Ngoc VU[2]
[1]University of Lille, France; [2]Andra, France

3:10pm - 3:30pm
ID: 349 / PS #9: 003

Implementation of a temperature-dependent constitutive model for argillaceous hard soils – weak rocks in MFront

Miguel A. Mánica[1], Eric Simo[2,4,5], Philipp Herold[2], Thomas Helfer[3], Thomas Nagel[4], Alexandru Tatomir[5]
[1]Institute of Engineering, National Autonomous University of Mexico, Mexico City, Mexico; [2]BGE TECHNOLOGY GmbH, Peine, Germany; [3]CEA, DES, IRESNE, DEC, Cadarache, France; [4]Geotechnical Institute, TU Bergakademie Freiberg, Germany; [5]BGE, Peine, Germany

3:30pm - 3:50pm
ID: 363 / PS #9: 004

Outcome of a THM modelling benchmark on the effect of heating on clay formations

Christophe de Lesquen[1], Arnaud Dizier[2], Carlos Plúa[1], Gilles Armand[1], Eric Simo[3]
[1]Andra, France; [2]EURIDICE, Belgium; [3]BGE, Germany

3:50pm - 4:20pm

Coffee Break

Location: **In front of the lecture halls**

4:20pm - 6:00pm

PS #10: Geochemistry and fluid migration

Location: **Roter Saal**
Session Chair: **Christophe Tournassat**, Universtité d'Orléans (France) / Lawrence Berkeley National Laboratory (USA), France
Session Chair: **Juan Carlos Mayor**, Enresa, Spain

4:20pm - 4:40pm
ID: 287 / PS #10: 001

Profiles of natural tracers in porewater of a Mesozoic rock sequence in northern Switzerland

Thomas Gimmi[1,2], Paul Wersin[1], Lukas Aschwanden[1], Jin Ma[1], H. Niklaus Waber[3], Martin Mazurek[1], Carmen Zwahlen[1], Christoph Wanner[1], Daniel Traber[4]
[1]University of Bern, Bern, Switzerland; [2]Paul Scherrer Institut, Villigen, Switzerland; [3]WaterGeoChem Consulting, Bern, Switzerland; [4]NAGRA, Wettingen, Switzerland

4:40pm - 5:00pm
ID: 359 / PS #10: 002

Quantifying the evolution and transport of helium in porewater across the Mesozoic sedimentary sequence in northern Switzerland

Daniel Rufer[1], Jin Ma[1], Christoph Wanner[1], H. Niklaus Waber[2], Daniel Traber[3]
[1]University of Bern, Switzerland; [2]WaterGeochem Consulting, Bern, Switzerland; [3]Nagra, Wettingen, Switzerland

5:00pm - 5:20pm
ID: 288 / PS #10: 003

Transport characteristics and barrier quality of a 134 m thick Opalinus Clay formation in southern Germany obtained from its porewater noble gas profile

Johanna Lippmann-Pipke[1], Samuel Niedermann[2], Karsten Osenbrück[1], Hua Shao[1], Daniel Rufer[3], Thomas Mann[1]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany; [2]German Research Centre for Geosciences (GFZ), Potsdam, Germany; [3]University of Bern, Bern, Switzerland

5:20pm - 5:40pm
ID: 312 / PS #10: 004

Multiscale experimental comparison of water diffusion by neutron tomography in a porous clay medium partially water-saturated

Lucas Désert[1,2,3], Sébastien Savoye[3], Emmanuel Tertre[1], Alessandro Tengattini[4], Arnaud Mazurier[1], Baptiste Dazas[1], Laurent Michot[5], Pierre Henocq[2], Christophe Tournassat[6], Eric Ferrage[1]
[1]Université de Poitiers, IC2MP, France; [2]Andra, France; [3]CEA, France; [4]ILL, France; [5]Sorbonne Université, Phénix, France; [6]ISTO, France

5:40pm - 6:00pm
ID: 161 / PS #10: 005

Streamlined modelling approach for transport of natural organic matter linked transport of radionuclides in Boom Clay

Norbert Maes[1], Joan Govaerts[1], Stéphane Brassinnes[2]
[1]SCK CEN, Belgium; [2]ONDRAF/NIRAS, Belgium

4:20pm - 6:00pm

PS #11: THM bentonite

Location: **Bonatz Saal**
Session Chair: **Weimin YE**, Tongji University, China, People's Republic of
Session Chair: **María Victoria Villar**, CIEMAT, Spain

4:20pm - 4:40pm
ID: 227 / PS #11: 001

Homogenisation in small-scale swelling tests with different water inflow rates

Ann Dueck[1], Daniel Malmberg[1], Patrik Sellin[2]
[1]Clay Technology Lund AB, Sweden; [2]Svensk Kärnbränslehantering AB (SKB), Sweden

---

4:40pm - 5:00pm
ID: 158 / PS #11: 002

Cross-scale assessment of the hydromechanically coupled behavior of two German bentonites

Antonia Nitsch[1], Ali Asaad[2], Katja Emmerich[2], Torsten Wichtmann[1], Wiebke Baille[1]
[1]Chair of Soil Mechanics, Foundation Engineering and Environmental Geotechnics, Department of Civil and Environmental Engineering, Ruhr-University Bochum, Bochum, Germany; [2]Institute of Concrete Structures and Building Materials (IMB/MPA/CMM), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

---

5:00pm - 5:20pm
ID: 408 / PS #11: 003

Thermo-hydro-mechanical modelling of bentonite using a double-porous hypoplastic bentonite model in OpenGeoSys/MFront: implementation, verification and validation

Tymofiy Gerasimov[1], Eric Simo[1,2], Thomas Nagel[2], Christoph Lehmann[3], David Masin[4], Tomas Krejci[5], Jaroslav Kruis[5], Thomas Helfer[6], Alexandru Tatomir[7]
[1]BGE TECHNOLOGY GmbH, Germany; [2]TU Bergakademie Freiberg, Germany; [3]Helmholtz Centre for Environmental Research – UFZ, Germany; [4]Charles University, Czech Republic; [5]Czech Technical University in Prague, Czech Republic; [6]CEA, DES, IRESNE, DEC, France; [7]BGE mbH, Federal Company for Radioactive Waste Disposal, Germany

---

5:20pm - 5:40pm
ID: 112 / PS #11: 004

Modelling the Full Scale Heater Experiment: Results of the international Benchmark Project DECOVALEX

Bastian Johannes Graupner[1], Kate Thatcher[2], Rebecca Newson[2], Michael Pitz[3], Jan Thiedau[3], Sonja Kaiser[4], Thomas Nagel[4], Luca Urpi[5], Peng-Zhi Pan[6], Wenbo Hou[6], Larissa Friedenberg[7], Taehyun Kim[8], Chan-Hee Park[9], Changsoo Lee[8], Jonny Rutqvist[10], Ruiping Guo[11], Teklu Hadgu[12], Edward Matteo[12]
[1]Swiss Federal Nuclear Safety Inspectorate (ENSI), Brugg, Switzerland; [2]Quintessa Ltd, Warrington, UK; [3]Federal Institute for Geosciences and Natural Resources (BGR), Hanover, Germany; [4]Technische Universität Bergakademie Freiberg, Germany; [5]CSD, Aarau, Switzerland; [6]Chinese Academy of Science, China; [7]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Braunschweig, Germany; [8]Korea Atomic Energy Research Institute (KAERI), Daejeon, Korea; [9]Korea Institute of Geoscience and Mineral Resources (KIGAM), Daejeon, Korea; [10]Lawrence Berkeley National Laboratory (LBNL), Berkeley, California, USA; [11]Nuclear Waste Management Organization NWMO, Canada; [12]Sandia National Laboratories, USA

5:40pm - 6:00pm
ID: 197 / PS #11: 005

Hierarchical benchmarking of Richards-based thermo-hydro-mechanical coupled models for repositories of high-level radioactive waste

Jörg Buchwald[1,2], Wenqing Wang[1], Norbert Grunwald[1], Thomas Nagel[2], Olaf Kolditz[1]
[1]Helmholtz Centre for Environmental Research (UFZ), Leipzig, Germany; [2]Technische Universität Bergakademie Freiberg - TABAF, Freiberg, Germany

4:20pm - 6:00pm

PS #12: Performance and uncertainty assessment

Location: **Blauer Saal**
Session Chair: **Xavier Sillen**, ONDRAF/NIRAS, Belgium
Session Chair: **Wolfram Rühaak**, BGE Bundesgesellschaft für Endlagerung mbH, Germany

4:20pm - 4:40pm
ID: 237 / PS #12: 001

Performance assessment modeling at the repository and component level for the Swiss deep geological repository

Dominik Zbinden[1], Ursula Lengler[1], Keurfon Luu[1], Babak Shabani[2], Chao Li[1], Alexandros Papafotiou[3], Paul Marschall[3]
[1]INTERA Inc. Swiss Branch, Wettingen, Switzerland; [2]INTERA Inc., Bloomington, IN, USA; [3]Nagra, Wettingen, Switzerland

---

4:40pm - 5:00pm
ID: 171 / PS #12: 002

Post-closure evolution of voids in geological disposal facility vaults and implications for containment

Sam Parsons[1], Simon Norris[1], Javier Corral[2], David Holton[3]
[1]Nuclear Waste Services; [2]Jacobs; [3]MCM Environmental Services Ltd

---

5:00pm - 5:20pm
ID: 315 / PS #12: 003

Uncertainty quantification of the elasto-viscoplastic behavior of COx claystone and long-term stability assessment of the drift's concrete liner

Duc Phi DO[1], Minh Ngoc VU[2], Dashnor HOXHA[1], Gilles ARMAND[2]
[1]Univ Orléans, Univ Tours, INSA CVL, Lamé, EA 7494, France; [2]Andra, 92298 Chatenay-Malabry, France

---

5:20pm - 5:40pm
ID: 222 / PS #12: 004

Comparing uncertainty quantification methods in the context of safety analyses for high-level nuclear waste disposal systems

Merle Marie Bjorge[1,2], Aqeel Afzal Chaudhry[2], Kata Kurgyis[2], Wolfram Rühaak[1,3], Thomas Nagel[2,4]
[1]Bundesgesellschaft für Endlagerung mbH (BGE), Peine, Germany; [2]Geotechnical Institute, Technische Universität Bergakademie Freiberg, Freiberg, Germany; [3]Technische Universität Darmstadt, Department of Geothermal Science and Technology, Darmstadt, Germany; [4]Freiberg Center for Water Research (ZeWaF), Freiberg, Germany

---

5:40pm - 6:00pm
ID: 232 / PS #12: 005

Modelling the impact of design variations in a spent nuclear fuel repository on near-field sulfide fluxes and Cu canister corrosion depths

Jin Ma[1], Peter Alt-Epping[1], Mika Niskanen[2], Barbara Pastina[2], Paul Wersin[1]
[1]University of Bern, Switzerland; [2]Posiva Oy, Finland

6:00pm - 11:59pm **Conference dinner**
Location: **Hangar No. 5**

Date: Wednesday, 27/Nov/2024

8:00am - 8:30am **Registration**

8:30am - 10:00am **Plenary #4: Gas**
Location: **Eilenriedehalle B**
Session Chair: **Maarten Van Geet**, ONDRAF/NIRAS, Belgium
Session Chair: **Simon Norris**, Nuclear Waste Services, United Kingdom

8:30am - 9:00am
ID: 201 / Plenary #4: 001
EURAD-GAS, a step forward in understanding gas transport in clay-ey materials
Séverine Levasseur[1], Xavier Sillen[1], Frédéric Collin[2], Magdalena Dymitrowska[3], Jon Harrington[4], Elke Jacops[5], Olaf Kolditz[6], Paul Marschall[7], Simon Norris[8], Jean Talandier[9], Laurent Truche[10], Jacques Wendling[9]
[1]ONDRAF/NIRAS, Belgium; [2]ULiège, Belgium; [3]IRSN, France; [4]BGS, UK; [5]SCK CEN, Belgium; [6]UFZ, Germany; [7]NAGRA, Switzerland; [8]Nuclear Waste Services, UK; [9]Andra, France; [10]Université Grenoble-Alpes, France

9:00am - 9:20am
ID: 167 / Plenary #4: 002
Ten years of laboratory gas testing in Boom Clay at the UPC/CIMNE Geotechnical Laboratory
Laura Gonzalez-Blanco[1,2], Enrique Romero[2,1], Séverine Levasseur[3]
[1]International Centre for Numerical Methods in Engineering (CIMNE), Spain; [2]Universitat Politècnica de Catalunya (UPC), Spain; [3]Belgian Agency for Radioactive Waste and Enriched Fissile Materials (ONDRAF/NIRAS), Belgium

9:20am - 9:40am
ID: 366 / Plenary #4: 003
Advective gas migration in Opalinus Clay at the Mont Terri URL
Robert Cuss[1], Jocelyn Gisiger[2], Antonio Rinaldi[3], Manuel Sentis[4], Andrew Wiseall[5], Jon Harrington[1]
[1]British Geological Survey, United Kingdom; [2]Solexperts AG, Mönchaltorf, Switzerland; [3]ETH Zurich, Swiss Seismological Service, Zurich, Switzerland; [4]Swiss Federal Nuclear Safety Inspectorate (ENSI), Brugg, Switzerland; [5]Now at Nuclear Waste Services, United Kingdom

9:40am - 10:00am
ID: 314 / Plenary #4: 004
Molecular scale understanding of gas transport in clays
Sergey Churakov[1,2], Jerry Owusu[1,2], Athanasios Mokos[1], Konstantinos Karalis[2], Nikolaos Prasianakis[1]
[1]Paul Scherrer Institute, Switzerland; [2]University of Berne, Switzerland

10:00am - 10:30am **Coffee Break**
Location: **Eilenriedehalle A**

10:30am - 12:00pm **Plenary #5: Competence building and transfer**
Location: **Eilenriedehalle B**
Session Chair: **Juan Carlos Mayor**, Enresa, Spain
Session Chair: **Astrid Göbel**, BGE, Germany
Invited Keynote: Christophe Bruggeman (Belgian Nuclear Research Center) "Competence building in the frame of radioactive waste management: challenges and expectations"

10:30am - 11:00am
Invited Keynote
ID: 457 / Plenary #5: 001
Competence building in the frame of radioactive waste management: challenges and expectations
Christophe Bruggeman
SCK CEN, Belgian Nuclear Research Center, Belgium

11:00am - 11:20am
ID: 330 / Plenary #5: 002
High performance reactive transport model for cement-claystone interface simulations
Micha Baur[1,2], Sergey Churakov[1,2], Nikolaos Prasianakis[1]
[1]Laboratory for Waste Management, Paul Scherrer Institute; [2]University of Bern, Institute of Geological Sciences

11:20am - 11:40am
ID: 392 / Plenary #5: 003
Hydro-chemo-mechanical and transport coupled phenomenon to explain overpressure in Callovo-Oxfordien clay formation
Lucile Rouïl[1,2,3], Stephane Gaboreau[2], Julio Gonçalvès[3], Jean Talandier[1], Jean-Charles Robinet[1]
[1]Andra, France; [2]BRGM, France; [3]CNRS, France

11:40am - 12:00pm
ID: 210 / Plenary #5: 004
Towards site specific R&D to underpin the management of gas generation in a UK Geological Disposal Facility (GDF)
Andy Cooke[1], Simon Norris[1], Ben Swift[2], Joseph Elmes[2], Pedram Mahzari[2]
[1]Nuclear Waste Services, United Kingdom; [2]Jacobs, United Kingdom

12:00pm - 12:30pm **2 min poster presentation #3**
Location: **Eilenriedehalle B**

12:00pm - 12:02pm
2 min poster
ID: 2319
Insights into the Interactions of Clay Minerals and Humic Acids: A Molecular Dynamics Study
Kanato Matsushima[1], Yuta Fukatsu[2], Takamitsu Ishidera[2], Ayano Eguchi[2], Kenji Yotsuji[2], Yukio Tachi[3], Takahiro Ohkubo[1]
[1]Graduate School of Engineering, Chiba University, Japan; [2]Nuclear Fuel Cycle Engineering Laboratories, Japan Atomic Energy Agency, Japan; [3]Horonobe Underground Research Center, Japan Atomic Energy Agency, Japan

12:02pm - 12:04pm
2 min poster
ID: 2221

Tracking bentonite-water interactions by stable-H- and O-isotope exchange over a thermal gradient: First isotopic results from the Alternative Buffer Materials 2 and 5 bentonites

Nadine J. Kanik[1], Fred J. Longstaffe[2], Arkadiusz Derkowski[1], H. Albert Gilg[3]
[1]Institute of Geological Sciences, PAS, Poland; [2]The University of Western Ontario; [3]Technical University of Munich

---

12:04pm - 12:06pm
2 min poster
ID: 2139

Experimental Study on Evaluation Method of Apparent Erosion Rate Constant of Bentonite using X-ray CT Images

Norihisa Osawa[1], Tomoko Ishii[1,2], Kenji Ishii[3], Yuichi Niibori[2]
[1]Taiheiyo Consultant Co., Ltd., Japan; [2]Tohoku University, Japan; [3]Kajima Corporation, Japan

---

12:06pm - 12:08pm
2 min poster
ID: 2373

The Hydro-mechanical Interaction between Different Tunnel Support Strategies and the Excavation Damaged Zone (EDZ)

Sina Shivaei[1], Maximilian Schoen[1], Arash Alimardani Lavasan[2], Torsten Wichtmann[1]
[1]Chair of Soil Mechanics, Foundation Engineering and Environmental Geotechnics, Ruhr University Bochum, Bochum, Germany; [2]Department of Civil Engineering, Luxembourg University, Luxembourg, Luxembourg

---

12:08pm - 12:10pm
2 min poster
ID: 2151

Gas transport along granite/bentonite interfaces

Vanesa Gutiérrez Rodrigo, Pedro Luis Martín Martín, María Victoria Villar Galicia
CIEMAT, Spain

12:30pm - 1:30pm **Lunch Break**
Location: **Eilenriedehalle A**

1:30pm - 2:30pm **Poster exhibition #3**
Location: **Eilenriedehalle A**

ID: 1463

What limits the temperature at canister surface in clay-based HLRW concepts? – Discussion in an international context

Saleem Chaudry, Reiner Dohrmann, Robert Lippmann
State Authority for Mining, Energy and Geology (LBEG), Hannover, Germany

---

ID: 299

The role of bentonite in the high-level radioactive waste repository design

Eva-Maria Gottron, Merle Bjorge, Stephen Klimke, Marc Wengler, Anne Bartetzko, Wolfram Rühaak
Federal Company for Radioactive Waste Disposal (BGE), Germany

---

ID: 402

Preliminary design of a disposal facility for high-level radioactive waste in claystone

Michael Werres[1], Stephen Klimke[1], Dominik Gottron[1], Frederik Fahrendorf[1], Niklas Bertrams[2], Thomas Lohser[1], Wolfram Rühaak[1]
[1]Bundesgesellschaft für Endlagerung mbH, Germany; [2]BGE Technology GmbH, Germany

---

ID: 132

Characterization of the Lower Cambrian and the Lower Triassic clayey formations in terms of the potential for the sitting of Deep Geological Repository of radioactive waste in Lithuania

Jurga Lazauskienė[1,2], Jolanta Čyžienė[2]
[1]Vilnius University, Lithuania; [2]Lithuanian Geological Survey under Ministry of Environment

---

ID: 302

Geological variability of the Opalinuston-Formation in Southern Germany: new insights from the research project SEPIA

Thomas Mann[1], Tilo Kneuker[1], Géraldine Nicole Zimmerli[2], Jochen Erbacher[1,3], André Bornemann[1], Bernhard Schuck[1], Reiner Dohrmann[1,3], Christoph Neukum[1], Lukas Pollok[1]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany; [2]Department of Geosciences, University of Fribourg, 1700 Fribourg, Switzerland; [3]State Authority for Mining, Energy and Geology (LBEG), Hannover, Germany

---

ID: 191

OVERVIEW OF GEODYNAMIC EVOLUTION EFFECT ON HYDROGEOLOGICAL PERFORMANCE OF DEEP GEOLOGICAL REPOSITORY SITE FOR RAWASTE. FEED BACK AND LESSONS LEARNED FROM TWO DECADES OF STUDIES

Hakim BENABDERRAHMANE, Johan HOLMEN
GeoRem Oy, Finland

ID: 280

Kiirunavaara Ca-smectite, northern Sweden: a natural analogue of long-term clay stability

Raphael Schneeberger[1], Ulf. B Andersson[2], Albert Gilg[3], Illya Bindeman[4], Reiner Dohrmann[5], Sirpa Kumpulainen[6], Leena Kiviranta[6], W. Crawford Elliott[7], J. Marion Wampler[7], Cyprian Ozigbo[8], Igor Villa[9], Tsubasa Otake[10], Ryosuke Kikuchi[10], Tatsuya Fujimura[11], Tsutomu Sato[10], Satoru Suzuki[12], Takahiro Goto[12], Shuhei Nemoto[12], Rizlan Bernier-Latmani[13], Natalia Jakus[13], Russell W. Alexander[14], Nicolas Michau[15], Mehran Behazin[16], Alex Hughes[17], Simon Norris[17], Ville Heino[18], Patrik Sellin[19], Daniel Svensson[19], Olivier X. Leupin[1]
[1]Nagra, Switzerland; [2]LKAB, Sweden; [3]Technische Universität München, Germany; [4]University of Oregon, USA; [5]BGR, Germany; [6]Mitta, Finland; [7]Georgia State University, USA; [8]Columbine Corporation, USA; [9]University of Bern, Switzerland and University of Milan Bicocca, Italy; [10]Faculty of Engineering, Hokkaido University, Japan; [11]Graduate School of Engineering, Hokkaido University,

Japan (currently: Civil Engineering Department, Nuclear Facilities Division, Taisei Corporation, Japan); [12]NUMO, Japan; [13]EPFL, Switzerland.; [14]Bedrock Geosciences, Switzerland; [15]Andra, France; [16]NWMO, Canada; [17]NWS, UK; [18]Posiva, Finland; [19]SKB, Sweden

ID: 278

Unveiling early diagenetic carbonate precipitation: Sequential C-isotope analysis of calcite and siderite in Opalinus Clay

Stephan Wohlwend[1], Lukas Aschwanden[1], Carmen Zwahlen[1], Martin Mazurek[1], Gaudenz Deplazes[2]
[1]Institute of Geological Sciences, University of Bern, 3012 Bern, Switzerland; [2]Nagra, 5430 Wettingen, Switzerland

ID: 340

Geochemistry of pore waters in Opalinus Clay at the Mont Terri Rock Laboratory within the Bitumen-Nitrate-Clay interaction experiment

Torben Weyand[1], Michael Jendras[1], Katrien Hendrix[2], Nele Bleyen[2]
[1]Bundesamt für die Sicherheit der nuklearen Entsorgung (BASE), Germany; [2]Belgian Nuclear Research Centre (SCK CEN), Belgium

ID: 361

39Ar and 37Ar in deep groundwater: Evaluation regarding young components, cross-formation flow and in-situ production

Daniel Rufer[1], Roland Purtschert[2], H. Niklaus Waber[3], Michael Heidinger[4], Daniel Traber[5], Jens Becker[5]
[1]Institute of Geological Sciences, University of Bern, Bern, Switzerland; [2]Climate & Environmental Physics, Physics Institute, University of Bern, Bern, Switzerland; [3]WaterGeoChem Consulting, Bern, Switzerland; [4]Hydroisotop GmbH, Schweitenkirchen, Germany; [5]Nagra, Wettingen, Switzerland

ID: 355

Geochemical profiles in the hydrogeological system of the Opalinus Clay at Mont Terri, Switzerland

Marie Bonitz[1], Anja Maria Schleicher[2], Theresa Hennig[1], David Jaeggi[4], Michael Kühn[1,3]
[1]GFZ German Research Centre for Geosciences, Fluid Systems Modelling, Potsdam, Germany; [2]GFZ German Research Centre for Geosciences, Inorganic and Isotope Geochemistry, Potsdam, Germany; [3]University of Potsdam, Institute of Geosciences, Potsdam, Germany; [4]Federal Office of Topography Swisstopo, Wabern, Switzerland

Appl. Poster Award
ID: 177

Crushed claystone used as material for the construction of EBS-components in repositories for nuclear waste – A generic methodology for material selection

Marvin Middelhoff
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany

ID: 297

Rock mass response to processes in a Sandwich shaft sealing system

Jürgen Hesser[1], Matthias Hinze[2], Markus Furche[1], David Jaeggi[3], Senecio Schefer[3]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany; [3]Bundesamt für Landestopografie (swisstopo), Switzerland

Appl. Poster Award
ID: 235

Modelling sulfide corrosion in the Swiss HLW repository under various repository settings

Jin Ma[1], Paul Wersin[1], Nikitas Diomidis[2]
[1]University of Bern, Switzerland; [2]Nagra, Switzerland

ID: 119

As-Placed Dry Density of Gap Fill Material in Overbreak Zones within the Placement Room

CHANG SEOK KIM, KENNETH BIRCH, PETER KEECH
Nuclear Waste Management Organization, Canada

ID: 427

Excavation of the Konrad 2 shaft landing station in a clay and marl claystone: geotechnical challenges and support solutions

Stephan Gehne[1], Mike Lieske[1], Jan Bauer[1], Rainer Weißmann[1], Mirko Polster[2], Volker Busse[1]
[1]Bundesgesellschaft für Endlagerung mbH, Germany; [2]BGE TECHNOLOGY GmbH, Germany

ID: 434

Feedback on the multi-scale mechanical and technical demonstration of drift construction at the French URL

Jad Zghondi, Gilles Armand, Jana Jaber, Minh-ngoc Vu, Jan Cornet, Carlos Plua, Roy Chaaya
Andra, France

ID: 195

A wireless data transmission system for the future deep geological repository

José Luis García-Siñeriz[1], Susana Tuñón[1], María Rey[1], Juan Carlos Mayor[2], Katja Emmerich[3], Matthias Hinze[4], David Jaeggi[5], Senecio Schefer[5]
[1]Amphos 21 Consulting S.L., Spain; [2]Empresa nacional de residuos radiactivos (Enresa), Spain; [3]Karlsruhe Institute of Technology (KIT), IMB/MPA/CMM, Karlsruhe, Germany; [4]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Braunschweig, Germany; [5]Bundesamt für Landestopografie (swisstopo), St-Ursanne, Switzerland

ID: 317

Observation of saturation processes in the Sandwich experiment with ERT (URL Mont Terri)

Markus Furche
Bundesanstalt für Geowissenschaften und Rohstoffe, Germany

Appl. Poster Award
ID: 442

Influence of polysulfide radicals in measuring corrosion rates of a carbon steel API 5L X65 in contact with cement grout in future nucle-ar waste disposal program

Yendoube Charles SANO MOYEME[1], Stéphanie BETELU[1], Johan BERTRAND[2], Stéphane GABOREAU[1], Karine GROENEN-SERRANO[3]
[1]BRGM, Orléans, France; [2]ANDRA, Châtelet-Malabry, France; [3]LGC, Toulouse, France

Appl. Poster Award
ID: 290

Estimating Water Retention of Compacted Bentonite with Cat-Boost: Integrating Physical Model Residuals and Penalized Learning

Muntasir Shehab, Reza Taherdangkoo, Christoph Butscher
Institute of Geotechnics, TU Bergakademie Freiberg, Gustav-Zeuner-Str. 1,Freiberg, 09599, Germany

ID: 261

Full-Scale In-Situ System Test (FISST) at the Finnish spent nuclear fuel disposal facility. Analysis and simulation.

Xavier Pintado[1], Mika Niskanen[2]
[1]Mitta Engineering Oy, Finland; [2]Posiva Oy, Finland

ID: 146

MANAGEMENT OF SORPTION DATA IN SUPPORT TO RADIOACTIVE WASTE MANAGEMENT

Stéphane Brassinnes[1], Marta López-García[2], Darío Pérez[2], Maria Abada[2], Irene Canals[2], Albert Nardi[2], Lara Duro[2], David García[2]
[1]Belgian Agency for Radioactive Waste and Enriched Fissile Materials (ONDRAF/NIRAS); [2]Amphos21

ID: 155

Numerical analysis of permeability in sphere-platelet mixtures

Ryunosuke Oishi[1], Tsubasa Yagi[2], Otono Miura[1], Shusaku Harada[1]
[1]Hokkaido University, Japan; [2]Radioactive Waste Management Funding and Research Center, Japan

ID: 193

Trace elements in Dutch Paleogene clays

Erika Neeft[1], Thilo Behrends[2], Alwina Hoving[3], Jasper Griffioen[3], Anne-Catherine Dieudonné[4], Phil Vardon[4], Marja Vuorio[1]
[1]COVRA, Netherlands, The; [2]Utrecht University; [3]TNO; [4]Delft University of Technology

ID: 268

Effect of environmental conditions on the sorption of 241Am(III) on natural clayrocks and their main constituents

Liesbeth Van Laer[1], Dorien Verhaegen[1], Greet Verstrepen[1], Delphine Durce[1], Norbert Maes[1], Stéphane Brassinnes[2]
[1]SCK CEN, Belgium; [2]NIRAS/ONDRAF, Belgium

Appl. Poster Award
ID: 307

Radionuclide transport in variably water-saturated compacted clays: a pore-scale view

Yuankai Yang[1], Ravi A. Patel[2], Yaoting Zhang[3], Nikolaos I. Prasianakis[4], Jenna Poonoosamy[1], Guido Deissmann[1], Sergey V. Churakov[4,5], Dirk Bosbach[1]
[1]Forschungszentrum Jülich, Germany; [2]Karlsruhe Institute of Technology (KIT), Germany; [3]Queen's University, Canada; [4]Paul Scherrer Institut, Switzerland; [5]University of Bern, Switzerland

Appl. Poster Award
ID: 319

Insights into the Interactions of Clay Minerals and Humic Acids: A Molecular Dynamics Study

Kanato Matsushima[1], Yuta Fukatsu[2], Takamitsu Ishidera[2], Ayano Eguchi[2], Kenji Yotsuji[2], Yukio Tachi[3], Takahiro Ohkubo[1]
[1]Graduate School of Engineering, Chiba University, Japan; [2]Nuclear Fuel Cycle Engineering Laboratories, Japan Atomic Energy Agency, Japan; [3]Horonobe Underground Research Center, Japan Atomic Energy Agency, Japan

Appl. Poster Award
ID: 346

Transport Properties of Water in a Polydisperse Coarse-Grained Model of Sodium Montmorillonite

Yaoting Zhang[1], Mikaella Brillantes[2], Justine Kuczera[1], Keyvan Ferasat[1], Scott Briggs[3], Chang Seok Kim[3], Jason D. Giallonardo[3], Thomas G. Tranter[4], George Opletal[5], Yuankai Yang[6], Jane Howe[2], Laurent K. Beland[1]
[1]Department of Mechanical and Materials Engineering, Queen's University, Kingston, Canada.; [2]Department of Materials Science and Engineering, University of Toronto, Toronto, Canada; [3]Nuclear Waste Management Organization, Toronto, Canada; [4]Ionworks Technologies Inc, Pittsburgh, United States of America; [5]Commonwealth Scientific and Industrial Research Organization, Data61, Melbourne, Australia; [6]Institute of Energy and Climate Research – Nuclear Waste Management (IEK-6) and JARA-CSD, Forschungszentrum Jülich GmbH, Jülich, Germany

ID: 406

Comparison of experimental diffusion data of various cationic elements in rock samples from the deep-hole drilling campaign in northern Switzerland with model predictions by the ClaySorDif model

Martin A. Glaus[1], Petar Bunic[1], Dmitrii A. Kulik[1], Cyrill Lang[1], George D. Miron[1], Luc R. Van Loon[1], Raphael A.J. Wüst[2]
[1]Paul Scherrer Institut, Switzerland; [2]Nagra, Switzerland

ID: 389

Iron(II)-montmorillonite interaction: experimental results and model-ling for dispersed and compacted systems

Jebril HADI[1], Mirjam KICZKA[1], Andreas JENNI[1], Paul WERSIN[1], Jules GOETHALS[2], Jean-Marc GRENECHE[3], Olivier LEUPIN[4], Nikitas DIOMIDIS[4]
[1]Institute of Geological Sciences, University of Bern, Bern, Switzerland; [2]Laboratoire Subatech, Nantes, France; [3]Le Mans Université, Le Mans, France; [4]Nagra, Wettingen, Switzerland

ID: 418

Electrostatic interactions at clay mineral surfaces: linking geochem-istry with geomechanical properties

Christophe Tournassat[1,2], Wenming Dong[2], Nicolas Marty[3], Sylvain Grangeon[3], Carl Steefel[2]

[1]Institut des Sciences de la Terre d'Orléans, Université d'Orléans, CNRS, BRGM, OSUC, Orléans 45071, France; [2]Earth and Environmental Sciences Area, Lawrence Berkeley National Laboratory, Berkeley, CA, USA; [3]BRGM, Orléans, France

ID: 323

Transport experiments in claystone: electrostatic effects and preferential pathways

Andreas Jenni[1], Mirjam Kiczka[1], Carmen Zwahlen[1], Urs Mäder[2], Hans Meeussen[3], Thomas Gimmi[1,4]
[1]University of Bern, Bern, Switzerland; [2]Rock-Water Consulting, Boll, Switzerland; [3]NRG, Petten, the Netherlands; [4]Laboratory for Waste Management, Paul Scherrer Institut, Villigen, Switzerland

ID: 162

Experimental investigation of the changes in transport properties of Opalinus claystone/concrete interface samples from the Mont Terri CI experiment

Norbert Maes[1], Quoc Tri Phung[1], Thi Nhan Nguyen[1,2], Anneleen Vanleeuw[1]
[1]SCK CEN, Belgium; [2]KULeuven, Belgium

ID: 291

Cement-Bentonite Interaction with Different Cement Materials at Elevated Temperatures 1: Experiments

Ryohei Kawakita[1], Sohtaro Anraku[1], Yuji Hanamachi[2], Seiichiro Mitsui[1], Hiroshi Sasamoto[1], Morihiro Mihara[1]
[1]Japan Atomic Energy Agency, Japan; [2]QJ Science Ltd., Japan

ID: 411

Gains and losses of exchangeable cations in 'alternative bentonite buffer material in-situ tests' (ABM-1, -2 and -5) after heating from 140 °C to 250 °C - what has caused observed differences?

Reiner Dohrmann[1,2], Jens Gröger-Trampe[1,2], Stephan Kaufhold[2]
[1]LBEG, Germany; [2]BGR, Germany

ID: 430

Evolution of microbial populations under the influence of increasing temperature in the Callovian-Oxfordian clay-rich rock

Mélanie Lundy[1], Marc Labat[2], Sylvie Daumas[3], Stefan Wechner[4], Yannick Linard[1]
[1]Andra, France; [2]Aix-Marseille Université, France; [3]CFG, France; [4]Hydroisotop GmbH, Germany

ID: 217

Differences between the basal spacings of random powder patterns and air-dried oriented aggregates of bentonite samples

Ana Beatriz Zabala[1], María Victoria Villar[1], Jaime F. Cuevas[2]
[1]CIEMAT, Spain; [2]UAM, Spain

Appl. Poster Award
ID: 246

Hydrogeochemical processes occurring in excavated argillaceous rocks stored at the surface as heaps and consequences on water chemistry

Myriam I. Agnel[1], Adrien Schwindt[1], Mathieu Debure[2], Joachim Tremosa[3], Yves Thiry[1], Paul-Olivier Redon[1]
[1]Andra, Centre de Meuse/Haute-Marne, 55290 Bure, France; [2]BRGM, French Geological Survey, 3 av. Claude-Guillemin, 45060 Orléans, France; [3]Geostock, 92500 Rueil-Malmaison, France

ID: 265

A mechanistic understanding of bentonite alteration at corroding iron interfaces

Haydn Martin Haynes[1], Graham Kenyon[1], James Hesketh[1], Cristiano Padovani[1], Lorraine Field[2], Nikitas Diomidis[3]
[1]Jacobs Clean Energy, Didcot, United Kingdom; [2]British Geological Survey, Keyworth, United Kingdom; [3]Nagra, Wettingen, Switzerland

ID: 301

Mutual effects of pH, matrix elements and organic ligands on the mobility of U(VI) in bentonite systems

Katja Schmeide[1], Thimo Philipp[1,2], Claudia Sieber[1], Nina Huittinen[1]
[1]Helmholtz-Zentrum Dresden - Rossendorf, Institute of Resource Ecology, Germany; [2]Present address: Federal Office for the Safety of Nuclear Waste Management (BASE), Germany

ID: 375

Quantitative analysis of the mineralogical composition of bentonites by full pattern fitting using the powdR package

Stephen Hillier[1,2], Stephan Kaufhold[3], Kristian Ufer[3], Jan Dietel[4], Adrián Lorenzo[5], Mercedes Suárez[5]
[1]James Hutton Institute, United Kingdom; [2]Department of Soil and Environment, SLU, Uppsala, Sweden; [3]BGR, Hannover, Germany; [4]Landeslabor Berlin-Brandenburg, Berlin, Germany; [5]Universidad de Salamanca, Salamanca, Spain

ID: 396

Acidification and CO2-degassing in bentonites triggered by oxida-tion of Fe(II)–containing minerals

Stefan Dultz
Leibniz Universität Hannover, Germany

ID: 437

Dynamic and static experiments for the identification of the effect of transient processes on corrosion

Ana María Fernández, Ursula Alonso, Paula Nieto, Manuel Mingarro, Tiziana Missana
CIEMAT, Spain

ID: 152

Effect of organic molecules on radionuclide retention in COx clay rock: the case of Ni-TBP/EDTA mixtures

Romain V.H. Dagnelie[1], Marwa Assaf[1], Emilie Thory[1], Pierre Henocq[2]
[1]Université Paris-Saclay, CEA, Service de Physico-Chimie, 91191, Gif-sur-Yvette; [2]Andra, R&D Division, parc de la Croix Blanche, 92298, Châtenay-Malabry

ID: 386

Distorting mirrors – new perspectives on the layer charge reduction phenomena in heat-treated smectites: implications for CEC measurements in bentonites

Artur Kuligiewicz, Arkadiusz Derkowski, Nadine J. Kanik
Institute of Geological Sciences, Polish Academy of Sciences, Poland

---

ID: 367

Self-sealing potential of fractures as a result of hydration, shear, and temperature

Robert Cuss[1], Andrew Wiseall[2], Jon Harrington[1]
[1]British Geological Survey, United Kingdom; [2]now at Nuclear Waste Services, United Kingdom

---

Appl. Poster Award
ID: 192

Effect of Sodium Occupancy and Solute Concentration on the Swelling Behaviour of Poorly Indurated Boom Clay

Hassan AL MAIS[1,2,3], Frederic COLLIN[1], Yu-Jun CUI[2], XiangLing LI[3], Elie VALCKE[3], Lian WANG[3], Suresh SEETHARAM[3], Temenuga GEORGIEVA[3]
[1]Université de Liège, Belgium; [2]Ecole des Ponts et Chaussées, Champs-sur-Marne, France; [3]SCK-CEN, Mol, Belgium

---

Appl. Poster Award
ID: 286

The anisotropic creep behaviour and the long-term strength of Opalinus Clay

Lina Gotzen[1], Lisa Winhausen[1], Mohammadreza Jalali[1], Florian Amann[1,2]
[1]Department of Engineering Geology and Hydrogeology, RWTH Aachen, Germany; [2]Fraunhofer Research Institution for Energy Infrastructures and Geothermal Systems IEG, Germany

---

ID: 331

Numerical analyses of geological barrier integrity under parameter uncertainty

Jan Thiedau, Maximilian Bittens, Maßmann Jobst, Mayr Sibylle
Bundesanstalt für Geowissenschaften und Rohstoffe, Germany

ID: 374

Assessment of in-situ heater experiments conducted in the Callo-vo-Oxfordian claystone based on the French high-level radioactive waste disposal concept

Carlos Plúa[1], Minh-Ngoc Vu[2], Frédéric Bumbieler[2], Armand Gilles[1]
[1]Andra, Meuse/Haute-Marne Underground Research Laboratory, Bure, France; [2]Andra, Châtenay-Malabry, France

---

ID: 121

HE-E heating experiment in the Mont Terri rock laboratory - sampling of a hot, unconsolidated granular bentonite buffer after 12 years of heating during continued operation

Florian Kober[1], Urs Mäder[2], Maria Villar[3], Bill Lanyon[4]
[1]Nagra, Switzerland; [2]Rock Water Consulting, Boll, Switzerland; [3]CIEMAT, Madrid, Spain; [4]Fracture Systems Ltd., St. Ives, Great Britain

---

ID: 419

A standard thermodynamic-based extension of the Modified Cam-Clay model for plastic-viscoplastic geomaterials

Simon Raude, Goustan Bacquaert, Kyrylo Kazymyrenko, David Haboussa
EDF, France

ID: 148

Enhancements to a Hydromechanical Material Model for Compacted Bentonite

Ola Kristensson[1], Mattias Åkesson[2]
[1]Clay Technology, Lund, Sweden; [2]Swedish Nuclear Fuel and Waste Management Co, Solna, Sweden

---

ID: 381

Numerical analysis of the re-saturation of bentonites under isothermal and non-isothermal conditions using a double-porosity model

Ramon Vasconcelos[1], Antonio Gens[1], Carlos Eduardo Rodríguez[1], Jean Vaunat[1], María Victoria Villar[2]
[1]Universitat Politècnica de Catalunya (UPC) - CIMNE, Barcelona, Spain; [2]Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

---

Appl. Poster Award
ID: 203

HYDRO-MECHANICAL BEHAVIOUR OF BENTONITE AT HIGH TEMPERATURE

NATALIA GIMENO, RUBÉN JAVIER IGLESIAS, GUILLERMO GARCIA, MARIA VICTORIA VILLAR
CIEMAT, Spain

ID: 215

Geochemical modelling of mineral-water reaction between Bavarian bentonite B25 and Opalinus clay pore solution

Kyra Jantschik, Artur Meleshyn
GRS gGmbH, Germany

ID: 239

Thermochemical alterations in montmorillonite: Experiment constraints in the presence of organic anion ligands

Ritwick Sudheer Kumar, Laurence N. Warr, Georg H. Grathoff, Balu R. Thombare
University of Greifswald, Institute for Geography and Geology, Department of Economic Geology and Mineralogy, Greifswald, Germany

---

Appl. Poster Award
ID: 221

Tracking bentonite-water interactions by stable-H- and O-isotope exchange over a thermal gradient: First isotopic results from the Alternative Buffer Materials 2 and 5 bentonites

Nadine J. Kanik[1], Fred J. Longstaffe[2], Arkadiusz Derkowski[1], H. Albert Gilg[3]
[1]Institute of Geological Sciences, PAS, Poland; [2]The University of Western Ontario; [3]Technical University of Munich

ID: 336
Engineered Barrier 200C – High temperature in-situ experiment
Jiří Svoboda, Radek Vašíček
Czech Technical University, Czech Republic

ID: 354
Modeling of the HotBENT test using COMSOL Multiphysics
Daniel Malmberg[1], Alex Spetz[1], Chang Seok Kim[2]
[1]Clay Technology Lund AB, Sweden; [2]Nuclear Waste Management Organisation, Canada

Appl. Poster Award
ID: 456
Modelling the Disturbed Rock Zone behaviour in a Deep Geological Repository
Nandini Adla, Pavan Kumar Bhukya, Dali Naidu Arnepalli
Deaprtment of Civil Engineering, Indian Institute of Technology, Madras, India

ID: 140
Elastic-plastic components in void ratio with suction
Tomoyoshi Nishimura[1], Hanbing Bian[2], Isam Shahrour[3]
[1]Ashikaga University, Japan; [2]Polytech'Lille, Université de Lille, France; [3]Polytech'Lille, Université de Lille, France

ID: 439
Benchmark case for non-isothermal multiphase flow and reactive transport for radioactive waste disposal
Javier Samper[1], Alba Mon[1], Etienne Ausborde[2], Tianfu Xu[3], Yu Han[3], Milan Hokr[4], Asta Narkuniene[5], Luis Montenegro[1], Brahim Amaziane[2], Mustapha Elossmani[2], Y Yuan[3], Jan Sembera[4], Povilas Poskas[5]
[1]Universidad de A Coruña, Spain; [2]E2S UPPA, CNRS, LMAP, Universite de Pau et des Pays de l'Adour, Pau, France; [3]College of New Energy and Environment, Jilin University, Changchun 130021, P. R. China; [4]Technical University of Liberec (TUL) Czech Republic; [5]Lithuanian Energy Institute, Nuclear Engineering Laboratory, Kaunas, Lithuania

Appl. Poster Award
ID: 410
Experimental and numerical modelling of binary bentonite-based mixture compressibility
Arisleidy Mesa-Alcantara[1], Enrique Romero[1,2], Joel Torres-Serra[2], Nadia Mokni[3]
[1]International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain; [2]Universitat Politècnica de Catalunya, Barcelona, Spain; [3]Institut de Radioprotection et de Sûreté Nucléaire (IRSN), Fontenay-aux-Roses, France

Appl. Poster Award
ID: 421
The influence of faults on the geomechanical properties of Opal-inus Clay – First results from the PF-A experiment
Lisa Winhausen[1], Florian Amann[1,2], Martin Ziegler[3], Chris J. Marone[4,5]
[1]Department of Engineering Geology, RWTH Aachen, Germany; [2]Fraunhofer Research Institution for Energy Infrastructures and Geothermal Systems IEG, Aachen, Germany; [3]Swiss Federal Office of Topography (swisstopo), Mont Terri URL, St-Ursanne, Switzerland; [4]Dipartimento di Scienze della Terra La Sapienza Università di Roma, Italy; [5]Department of Geosciences, Pennsylvania State University, Pennsylvania, USA

ID: 242
Diffusion of dissolved gases in clay: a collaborative modelling exercise of EURAD GAS
Elke Jacops[1], Li Yu[1], Joan Govaerts[1], Abhishek Gupta[2], Michael Pitz[3,8], Gesa Ziefle[3], Anne-Catherine Dieudonné[5], Asta Narkuniene[6], Frédéric Collin[7], Gilles Corman[7], Séverine Levasseur[4]
[1]SCK CEN, Belgium; [2]Aalto University, Finland; [3]BGR, Germany; [4]ONDRAF/NIRAS, Belgium; [5]TU Delft, The Netherlands; [6]Lei, Lithuania; [7]ULiège, Belgium; [8]TU Bergakademie Freiberg, Germany

Appl. Poster Award
ID: 139
Experimental Study on Evaluation Method of Apparent Erosion Rate Constant of Bentonite using X-ray CT Images
Norihisa Osawa[1], Tomoko Ishii[1,2], Kenji Ishii[3], Yuichi Niibori[2]
[1]Taiheiyo Consultant Co., Ltd., Japan; [2]Tohoku University, Japan; [3]Kajima Corporation, Japan

ID: 164
Modeling of gas propagation along a micro-tunnel in the Meuse / Haute-Marne Underground Research Laboratory
Cécile Coulon[1], Guillermo Martinez[1], Catherine Yu[1], Thomas Cavalera[1], Mohamed Hayek[1], Rémi de La Vaissière[2]
[1]INTERA Incorporated, France/Switzerland/United States; [2]ANDRA, Bure, France

ID: 218
The effect of an alkaline plume on the self-sealing capacity of Boom Clay evidenced by high resolution computed tomography and hy-draulic conductivity measurements
Miroslav Honty[1], Ivan Josipovic[2], Matthieu N. Boone[2], Severine Levasseur[3], Xavier Sillen[3]
[1]SCK-CEN, Belgian Nuclear Research Center, Mol, Belgium; [2]UGent, Department of Physics and Astronomy, Gent University, Belgium; [3]ONDRAF/NIRAS, Belgian National Agency for Radioactive Waste and Enriched Fissile Materials, Brussels, Belgium

Appl. Poster Award
ID: 350
Modelling gas drainage in argillite pores with SPH method
Kayani Ganeshalingam[1,2], Magdalena Dymitrowska[1], Djimédo Kondo[2]
[1]Institut de Radioprotection et de Sûreté Nucléaire(IRSN), PSE-ENV/SPDR/LETIS, France; [2]Institut Jean le Rond d'Alembert, France

Appl. Poster Award
ID: 373
The Hydro-mechanical Interaction between Different Tunnel Support Strategies and the Excavation Damaged Zone (EDZ)
Sina Shivaei[1], Maximilian Schoen[1], Arash Alimardani Lavasan[2], Torsten Wichtmann[1]
[1]Chair of Soil Mechanics, Foundation Engineering and Environmental Geotechnics, Ruhr University Bochum, Bochum, Germany; [2]Department of Civil Engineering, Luxembourg University, Luxembourg, Luxembourg

Appl. Poster Award
ID: 151
Gas transport along granite/bentonite interfaces
Vanesa Gutiérrez Rodrigo, Pedro Luis Martín Martín, María Victoria Villar Galicia
CIEMAT, Spain

Appl. Poster Award
ID: 306
Interactions at the interface between EBS-components of a repository for nuclear waste in claystone formations
Marvin Middelhoff[1], Jean Talandier[2]
[1]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany; [2]Agence pour la gestion des déchets radioactifs (Andra), France

ID: 388
Mini GAST: Experimental Upscaling of an Engineered Gas Permeable Seal
Enrique Romero[1,2], Clara Alvarado[2], Antonio Lloret[1], Juliana Knobelsdorf[2], Thomas Spillmann[3]
[1]Universitat Politècnica de Catalunya (UPC), Barcelona, Spain; [2]International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain; [3]National Cooperative for the Disposal of Radioactive Waste (Nagra), Wettingen, Switzerland

ID: 416
Laboratory scale experimental assessment of bentonite-sand mixtures
Caroline C. Graham[1], Jon F. Harrington[1], Qian Zhang[1], Jean Talandier[2], Remi de La Vaissière[2]
[1]British Geological Survey (BGS), United Kingdom; [2]Agence nationale pour la gestion des déchets radioactifs (ANDRA), France

ID: 168
Experimental study and numerical modeling of poromechanical be-haviour of Callovo-Oxfordian claystone under drained and undrained conditions
Yuhao ZHANG[1], Shouyi XIE[1], Jianfu SHAO[1], Minh-Ngoc VU[2]
[1]University of Lille, France; [2]Andra, France

Appl. Poster Award
ID: 339
Hydro-mechanical Properties of Rock and Bentonite Mixtures for Gas Management within Geological Disposal Facilities
Elise Wai-Ming Mouat[1], Ian L Molnar[1], Christopher McDermott[1], Bryne Ngwenya[1], Clare Bird[2], George Towler[3]
[1]The University of Edinburgh, United Kingdom; [2]Stirling University; [3]Quintessa ltd

2:30pm - 3:50pm

PS #13: HM Processes
Location: **Roter Saal**
Session Chair: **Wiebke Baille**, Ruhr-Universität Bochum, Germany
Session Chair: **Xavier Sillen**, ONDRAF/NIRAS, Belgium

2:30pm - 2:50pm
ID: 189 / PS #13: 001
Hydraulic parameter estimations from borehole testing: evaluating the impact of hydro-mechanical processes in low-permeability clay formations
Luca Urpi[1], Rainer Schwarz[1], Armin Pechstein[2]
[1]CSD Ingenieure AG, Switzerland; [2]Nagra, Switzerland

2:50pm - 3:10pm
ID: 285 / PS #13: 002
A physically motivated model concept for the retention behaviour of swelling clayey media in the context of coupled THM simulations
Vinay Kumar[1], Steffen Besse[1], Thomas Nagel[2]
[1]Federal Institute for Geosciences and Natural Resources, Hannover, Germany; [2]Technische Universität Bergakademie Freiberg, Freiberg, Germany

3:10pm - 3:30pm
ID: 181 / PS #13: 003
Changes in swelling pressure distribution on radially swollen bentonite buffer surfaces
Shinya Tachibana[1], Tomohide Takeyama[1], Atsushi Iizuka[1], Daisuke Hayashi[2], Hirohito Kikuchi[2], Ryo Yasuda[2]
[1]Kobe University, Japan; [2]Radioactive Waste Management Funding and Research Center, Japan

3:30pm - 3:50pm
ID: 433 / PS #13: 004
Hydro-mechanical behaviour and microstructural evolution of recompacted Opalinus Clay as backfilling material
Alessio Ferrari[1], Qazim Llabjani[1], Olivier Leupin[2], Lyesse Laloui[1]
[1]Swiss Federal Institute of Technology Lausanne (EPFL), Laboratory of Soil Mechanics, Lausanne, Switzerland; [2]Nationale Genossenschaft für die Lagerung radioaktiver Abfälle (NAGRA), Wettingen, Switzerland

2:30pm - 3:50pm

PS #14: Colloid formation from bentonite
Location: **Bonatz Saal**
Session Chair: **Mika Olavi Niskanen**, Posiva Oy, Finland
Session Chair: **Christophe Tournassat**, Universtité d'Orléans (France) / Lawrence Berkeley National Laboratory (USA), France

2:30pm - 2:50pm
ID: 390 / PS #14: 001
Lessons learned from 25 years of experiments on erosion & colloid formation from compacted bentonite
Ursula Alonso, Tiziana Missana
CIEMAT, Spain

2:50pm - 3:10pm
ID: 264 / PS #14: 002
Montmorillonite colloid erosion in low ionic strength water under stagnant and flow conditions studied in artificial fractures
Magnus Hedström[1], Ulf Nilsson[1], Ralf Lamminmäki[2]
[1]Clay Technology, Sweden; [2]Posiva Oy, Finland

3:10pm - 3:30pm
ID: 113 / PS #14: 003
Numerical modelling of bentonite mass losses due to expansion, erosion, and sedimentation within thin fractures
Arnau Pont[1], Virginia Cabrera[1], Andrés Idiart[1], Mikel Diéguez[2], Úrsula Alonso[2], Patrik Sellin[3], Macarena Leal[3]
[1]Amphos 21, Spain; [2]CIEMAT, Spain; [3]SKB, Sweden

3:30pm - 3:50pm
ID: 409 / PS #14: 004
Quantification of bentonite mass loss in shear zone from CT scans using digital rock physics and machine learning approach: example from the LIT experiment (GTS, Switzerland)
Sarah Hupfer[1], Janis Pingel[1], Bill Lanyon[2], Raphael Schneeberger[3], Ingo Blechschmidt[3], Frieder Enzmann[4], Saeid Sadeghnejad[1], Thorsten Schäfer[1]
[1]Applied Geology, Institute for Geoscience, Friedrich-Schiller-University Jena, Jena, Germany; [2]Fracture Systems Ltd., St. Ives, United Kingdom; [3]Nagra (National Cooperative for the Disposal of Radioactive Waste), Wettingen, Switzerland; [4]Geoscience Institute, Johannes Gutenberg University Mainz, Mainz, Germany

2:30pm - 3:50pm

PS #15: Numerical tools for HMC processes

Location: **Blauer Saal**
Session Chair: **María Victoria Villar**, CIEMAT, Spain
Session Chair: **Lucie Hausmannova**, SÚRAO, Czech Republic

2:30pm - 2:50pm
ID: 240 / PS #15: 001
Hydro-chemo-mechanical modelling of bentonite-based seals - understanding key couplings for long-term performance
Andrés IDIART[1], Marcelo LAVIÑA[1], Miquel DE LA IGLESIA[1], Benoit COCHEPIN[2], Nicolas MICHAU[2], Jean TALANDIER[2]
[1]Amphos 21 Consulting S.L., Barcelona, Spain; [2]Andra, Chatenay-Malabry, France

2:50pm - 3:10pm
ID: 166 / PS #15: 002
Numerical tool for THCM equilibrium conditions in bentonite
Gema Urraca Lara, Adrián Sánchez-Migallón, Rubén López-Vizcaíno, Ángel Yustres, Laura Asensio, Vicente Navarro
Universidad Castilla La-Mancha, Spain

3:10pm - 3:30pm
ID: 190 / PS #15: 003
HMC simulation of swelling pressure test on bentonite using the double structure model considering the surface phenomena of mineral crystal
Hiroyuki Kyokawa, Ryuhei Urata
Nagoya Institute of Technology, Japan

3:30pm - 3:50pm
ID: 448 / PS #15: 004
VARS global sensitivity analyses of key geochemical variables for the long-term geochemical evolution of a geological repository
Javier Samper[1], Carlos López-Vázquez[2], Bruno Pisani[1], Alba Mon[1], Aurora Core Samper-Pilar[1], Javier Samper-Pilar[1]
[1]Universidad de A Coruña, Spain; [2]Universidad ORT Uruguay

3:50pm - 4:20pm

Coffee Break

Location: **In front of the lecture halls**

4:20pm - 6:00pm

PS #16: (T)HM experiments

Location: **Roter Saal**
Session Chair: **Patrik Sellin**, SKB, Sweden
Session Chair: **Wiebke Baille**, Ruhr-Universität Bochum, Germany

4:20pm - 4:40pm
ID: 154 / PS #16: 001
Novel insights into shales and claystones behaviour: results from recent testing campaigns
Eleonora Crisci[1], Silvio Giger[2]
[1]Nesol Numerical Engineering Solutions, Lausanne, Switzerland; [2]Nagra, National Cooperative for the Disposal of Radioactive Waste, Wettingen, Switzerland

4:40pm - 5:00pm
ID: 304 / PS #16: 002
Innovative use of distributed fibre optics for assessing the strain field evolution of Opalinus Clay during gas invasion
Qazim Llabjani[1], Alessio Ferrari[1], Paul Marschall[2], Lyesse Laloui[1]
[1]Swiss Federal Institute of Technology Lausanne (EPFL), Laboratory of Soil Mechanics, Lausanne, Switzerland; [2]Nationale Genossenschaft für die Lagerung radioaktiver Abfälle (NAGRA), Wettingen, Switzerland

5:00pm - 5:20pm
ID: 443 / PS #16: 003

Exploring the thermo-hydro-mechanical behaviour of a plastic deep clayey formation under oedometer conditions

Núria Sau[1,2], Enrique Romero[2,1], Hervé Van Baelen[3]
[1]CIMNE, Spain; [2]UPC, Spain; [3]ONDRAF/NIRAS, Belgium

5:20pm - 5:40pm
ID: 279 / PS #16: 004

Hydro-mechanical behaviour of Boom Clay investigated through high capacity consolidated drained triaxial tests.

Sophie De Kock[1], Bertrand François[1], Frédéric Collin[1], Arnaud Dizier[2], Séverine Levasseur[3]
[1]Université de Liège, Belgium; [2]EURIDICE, Mol, Belgium; [3]ONDRAF/NIRAS, Bruxelles, Belgium

---

5:40pm - 6:00pm
ID: 276 / PS #16: 005

Thermal effects on the drained triaxial compressive and tensile strengths of a transversely isotropic claystone

Chuanrui Wang[1], Christophe de Lesquen[2], Minh-Ngoc Vu[2], Jean Talandier[2], Jianfu Shao[1]
[1]University of Lille, France; [2]Andra, France

4:20pm - 6:00pm

PS #17: Repository engineering

Location: **Bonatz Saal**
Session Chair: **Shigeru Kubota**, Nuclear Waste Management Organization of Japan, Japan
Session Chair: **Amade Halasz**, PURAM, Hungary

4:20pm - 4:40pm
ID: 135 / PS #17: 001

The Integrated Geomodel for the Swiss nuclear waste deep geological repository: towards a digital twin for project optimization

MICHELE CLAPS, VALENTINA ZAMPETTI, IRINA GAUS
NAGRA, Switzerland

4:40pm - 5:00pm
ID: 129 / PS #17: 002

Virtual and augmented reality as a cutting-edge technology for modelling of nuclear waste repositories

Kemal Yildizdag, Claus Mindermann, Paul Lorenz
BGE - the Federal Company for Radioactive Waste Disposal, Germany

---

5:00pm - 5:20pm
ID: 398 / PS #17: 003

Sand-claystone mixtures: Investigating the impact of sand proportions on hydro-mechanical behavior at different scales

Anaïs LEROY[1], Olivier CUISINIER[1], Farimah MASROURI[1], Jean TALANDIER[2]
[1]Université de Lorraine – LEMTA (UMR 7563) CNRS, Vandœuvre-lès-Nancy, France; [2]Andra, Châtenay-Malabry, France

---

5:20pm - 5:40pm
ID: 149 / PS #17: 004

Long-term soil-structure interaction for tunnels in poorly indurated clay in the HADES Underground Research Laboratory (Mol, Belgium)

Temenuga Georgieva[1], Arnaud Dizier[1], Mieke De Craen[1], Jan Verstricht[1], Dries Nackaerts[1], Séverine Levasseur[2]
[1]EURIDICE, Belgium; [2]ONDRAF/NIRAS, Belgium

5:40pm - 6:00pm
ID: 365 / PS #17: 005

Experimental study on the shear strength and deformation characteristics of normally consolidated reconstituted Boom clay

Bhini Rani Chandan Malagar[1], Philip J. Vardon[1], André Niemeijer[2], Anne-Catherine Dieudonné[1]
[1]Delft University of Technology, Delft, The Netherlands; [2]Utrecht University, Utrecht, The Netherlands

4:20pm - 6:00pm

PS #18: Gas related processes

Location: **Blauer Saal**
Session Chair: **Simon Norris**, Nuclear Waste Services, United Kingdom
Session Chair: **Irina Gaus**, Nagra, Switzerland

4:20pm - 4:40pm
ID: 115 / PS #18: 001

NEMESIS: diffusion of dissolved neon in the HADES URL

Elke Jacops[1], Li Yu[1], Guangjing Chen[1,2], Anneleen Vanleeuw[1], Temenuga Georgieva[2], Xavier Sillen[3], Séverine Levasseur[3]
[1]SCK CEN, Belgium; [2]EURDICE, Belgium; [3]ONDRAF/NIRAS, Belgium

---

4:40pm - 5:00pm
ID: 326 / PS #18: 002

Diffusion measurements in natural and synthetic clay-based materi-als: comparison between volumetrically constrained and isotropically stressed samples with differing mineralogy

Jon Harrington[1], Elke Jacops[2], Elena Tamayo-Mas[1], Andrew Wiseall[3], Katherine Daniels[4]
[1]British Geological Survey, United Kingdom; [2]SCK CEN, Belgium; [3]Nuclear Waste Services; [4]Cardiff University

---

5:00pm - 5:20pm
ID: 122 / PS #18: 003

Full-3D THM-G Modelling of Gas Permeable Seal Test (GAST) Under Localized Gas Flow Configuration

Erdem Toprak[1], Sebastia Olivella[2], Enrique Romero[2]
[1]CIMNE, Spain; [2]UPC

5:20pm - 5:40pm
ID: 199 / PS #18: 004

Investigation of Gas Transport and Penetration in Saturated Callo-vo-Oxfordian Claystone Using X-ray Microtomography and Digital Volume Correlation

Hailing Shi[1], Jian-fu Shao[1], Shouyi Xie[1], Thomas Rougelot[1], Minh-Ngoc Vu[2], Jean Talandier[2]

[1]Univ. Lille, CNRS, Centrale Lille, UMR9013 - LaMcube - Laboratoire de Mécanique Multiphysique Multiéchelle, F-59000, Lille, France; [2]Andra, 92298 Chatenay Malabry, France

5:40pm - 6:00pm
ID: 415 / PS #18: 005

Effect of the heterogeneity on the gas transport properties of dif-ferent pellet/powder bentonite mixtures

Arisleidy Mesa-Alcantara[1,2], Enrique Romero[1,2], Laura Gonzalez-Blanco[1,2], Juan Mauricio Macías[2], Nadia Mokni[3]
[1]International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain; [2]Universitat Politècnica de Catalunya (UPC), 08034 Barcelona, Spain; [3]Institut de Radioprotection et de Sûreté Nucléaire IRSN, 92260 Fontenay-aux-Roses, France

Date: Thursday, 28/Nov/2024

8:00am - 8:30am — **Registration**

8:30am - 10:00am — **Plenary #6: Technology**
Location: **Eilenriedehalle B**
Session Chair: **Christophe Nussbaum**, swisstopo, Switzerland
Session Chair: **Stéphan Schumacher**, Andra, France
Invited Keynote: Thomas Lautsch (Bundesgesellschaft für Endlagerung, Germany) "KONRAD REPOSITORY - GROUND-CONTROL IN CHALLENGING CLAY STRATA"

8:30am - 9:00am
Invited Keynote
ID: 461 / Plenary #6: 001

KONRAD REPOSITORY - GROUND-CONTROL IN CHALLENGING CLAY STRATA

Thomas Lautsch
Bundesgesellschaft für Endlagerung, Germany

9:00am - 9:20am
ID: 228 / Plenary #6: 002

Evaluating the Performance of the Composite Seals at Canada's Underground Research Laboratory (2008-2023)

Priyanto Deni[1], Kim Chang Seok[2]
[1]Canadian Nuclear Laboratories, Canada; [2]Nuclear Waste Management Organization, Canada

9:20am - 9:40am
ID: 206 / Plenary #6: 003

A vertical Sandwich shaft sealing system at the Mont Terri rock laboratory

Katja Emmerich[1], Eleanor Bakker[1], Matthias Hinze[2], Klaus Wieczorek[2], Thomas Nagel[3], David Jaeggi[4], Senecio Schefer[4], Jürgen Hesser[5], Markus Furche[5], Rainer Schuhmann[6], Franz Königer[6], Uwe Glaubach[7], Christopher Rölke[8], Ralf Diedel[9], Juan Carlos Mayor[10], José Luis García-Siñeriz[11], Philipp Schädle[12]
[1]Karlsruhe Institute of Technology (KIT), Germany; [2]Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany; [3]TU Bergakademie Freiberg, Germany; [4]Bundesamt für Landestopografie (swisstopo), Switzerland; [5]Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Germany; [6]Ingenieur-Gesellschaft für Sensorik in der Umwelttechnik mbH (ISU), Germany; [7]Ingenieurpartnerschaft für Bergbau, Wasser und Deponietechnik (IBeWa), Germany; [8]Institut für Gebirgsmechanik (IfG), Germany; [9]Stephan Schmidt Gruppe, Germany; [10]Empresa nacional de residuos radiactivos (Enresa), Spain; [11]Amphos 21, Spain; [12]Eidgenössisches Nuklearsicherheitsinspektorat (ENSI), Switzerland

9:40am - 10:00am
ID: 432 / Plenary #6: 004

Contribution of Meuse / Haute-Marne URL to HLW cell design, construction methodology and phenomenological behavior knowledge

Frédéric BUMBIELER, Gilles ARMAND
andra, France

10:00am - 10:30am — **Coffee Break**
Location: **Eilenriedehalle A**

10:30am - 11:40am — **Plenary #7: Machine learning**
Location: **Eilenriedehalle B**
Session Chair: **Olaf Kolditz**, Helmholtz-Zentrum für Umweltforschung GmbH UFZ, Germany
Session Chair: **Stéphan Schumacher**, Andra, France

10:30am - 11:00am
ID: 399 / Plenary #7: 001

Developpement and improvement of numerical methods and tools for modelling coupled process: Lessons learnt during EURAD joint programing initiative

Francis CLARET[1], Guillaume PEPIN[2], Clément CANCES[3], Olaf KOLDITZ[4], Nikolaos PRASIANAKIS[5], Attila BAKSAY[6], Dmitry LUKIN[7]
[1]BRGM, France; [2]Andra, France; [3]Inria, France; [4]UFZ, Germany; [5]PSI, Switzerland; [6]Ts Enercon, Hungary; [7]SURAO, Czech republic

11:00am - 11:20am
ID: 224 / Plenary #7: 002

Physics-Based and Data-Driven Digital Twins for 3D-Temperature Evolution in the Near-field of the FE Tunnel at Mont Terri

WILFRIED PFINGSTEN, Guang Hu
PSI, Switzerland

11:20am - 11:40am
ID: 362 / Plenary #7: 003

Advancing Pore Segmentation in Opalinus Clay: A Machine Learning Ensemble with Probability Estimation

Marco Brysch[1], Ben Laurich[1], Monika Sester[2]
[1]Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover; [2]Institute of Cartography and Geoinformatics, Gottfried Wilhelm Leibniz University, Hannover

11:40am - 12:30pm — **Closing ceremony (awards)**
Location: **Eilenriedehalle B**

Session Chair: **Astrid Göbel**, BGE, Germany
Session Chair: **Johanna Lippmann-Pipke**, Bundesanstalt für Geowissenschaften und Rohstoffe, BGR, Germany
Conclusion by Dr. Thomas Lautsch (BGE); Panel discussion and Awarding of the poster prizes

12:30pm - 1:30pm	**Lunch Break** Location: **Eilenriedehalle A**
2:30pm - 5:30pm	**Scientific support programme: workshops, seminars** Location: **BGR**

Date: Friday, 29/Nov/2024

6:00am - 3:00pm	**Exc. Konrad: Excursion to DGR Konrad** Location: **DGR Konrad**
6:00am - 3:00pm	**Exc. Morsleben: Excursion to DGR Morsleben** Location: **DGR Morsleben**
9:00am - 12:30pm	**Scientific support programme: technical visits** Location: **BGR**