CLAYS IN NATURAL & ENGINEERED BARRIERS FOR RADIOACTIVE WASTE CONFINEMENT

SEPTEMBER 17→20, 2007
LILLE
3rd INTERNATIONAL MEETING

SECOND CIRCULAR
registration & program
The 3rd international meeting on “Clays in Natural and Engineered Barriers for Radioactive Waste Confinement” will be held, from 17 to 20 September 2007, at the International Convention Centre “Lille Grand Palais”, in Lille, France.

The Convention Centre is very conveniently located, at 5 minutes walking distance from the main city railway station, the city centre, the main shopping district and hotels.

The building imagined by Rem Khoolas is considered to be a model of its kind. Its tri-modal design (Conferences - Exhibitions - Zenith) combined with all the technological innovations assembled together in one and the same place contribute to make Lille Grand Palais a functional, aesthetic and versatile complex.

→ The “auditorium Pasteur” will be used for the morning plenary sessions and for one of the parallel sessions in the afternoon.

→ The “auditorium Eurotop” will be used only in the afternoon for the parallel sessions.

→ All posters will be displayed throughout the entire meeting in the “Espace Flandres”.

→ Lunches will be served in the “Jeanne de Flandre” room.

→ The Ice Breaker (Sunday 16th 18.00–21.00) will take place in the “Jeanne de Flandre” room.
Location of the Conference Centre “Lille Grand Palais”

Coming by car; it is recommended to park outside the city centre and take the underground or the “Citadine” shuttle bus.

→ **6 underground station car parks** are available 7 days a week, 24 hours a day, supervised from Monday to Saturday from 6.00am to midnight. They are in Lille (Porte d’Arras, Porte des Postes and CHR B Calmette underground stations), in Lomme (Saint-Philibert underground station) and in Villeneuve d’Ascq (Les Prés and 4 Cantons underground stations).

→ **2 Citadine link car parks** on the Champs de Mars (next to the Citadel) and Porte de Valenciennes underground station. They are supervised from Monday to Saturday from 7.00am to 8.00pm. For 1.60€ for 3 hours or 3€ all day, you get a free ride on the Citadine shuttle bus serving the centre and other districts in the city.
How to reach Lille and “Lille Grand Palais”

By road
Lille is at the crossroads of 6 motorways:
A1 from Paris (220 km) - A22 from Ghent (75 km), Antwerp (125 km) and Amsterdam (290 km), A23 from Valenciennes (55 km), A25 from Dunkirk (75 km) and Calais (110 km), A26 from Calais (110 km) - Reims (201 km) - Lyon (680 km), A27 from Brussels (120 km)

Information: 08 26 02 20 22
Website: www.bison-fute.equipement.gouv.fr

By rail
The railways stations Lille-Europe and Lille-Flandres, situated in the centre, are served by high-speed train. Lille is linked to Paris, Brussels and London (1 h 40/Eurostar)

Timetables, prices, booking:
Website: www.sncf.com ; www.raileurope.co.uk
Eurotunnel information:
+33 (0)3.21.00.61.00
Website: www.eurotunnel.com

By air
“Lille-Lesquin international airport”, at 10km from Lille. It has daily flights to many destinations in France and Europe (Direct flights to/from: Alger, Bordeaux, Clermont-Ferrand, Lyon, Marseille, Nantes, Nice, Strasbourg)

International airport information:
+33 (0)8.91.67.32.10 (0.23€/min)
Website: www.lille.aeroport.fr
Shuttle bus information:
+33 (0)8.91.67.32.10 (0.23€/min)
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Organisation of the meeting

Chair of the meeting
Patrick LANDAIS, Chairman, ANDRA
Jean-François ARANYOSSY, Vice chairman, ANDRA

Scientific committee
Michel CATHELINEAU, CNRS, France
Pierre DELAGE, ENPC, France
Reiner DOHRMANN, BGR, Germany
Charles FAIRHURST, USA
Andreas GAUTSCHI, NAGRA, Switzerland
Pedro HERNÁN, ENRESA, Spain
Philippe LALIEUX, ONDRAF.NIRAS, Belgium
Kazumi KITAYAMA, NUMO, Japan
Patrik SELLIN, SKB, Sweden
Joseph W. STUCKI, University of Illinois, USA

Organising committee
Catherine BERGDOLL, Secretary general
Jacqueline EYMARD, Communication

Permanent secretariat
Catherine BERGDOLL

Before/after the meeting
Andra – Meeting Lille 2007
1-7 rue Jean Monnet
Parc de la Croix Blanche
F - 92298 Châtenay-Malabry Cedex
Tel: +33(0)1.46.11.84.80
Fax: +33(0)1.46.11.84.10
E-mail: secretariat@lille2007.com

During the meeting
Lille Grand Palais
1, boulevard des Cités Unies
F - 59777 Euralille - Lille
Tél: +33(0)3.20.14.14.39
Fax: +33(0)3.20.14.14.14
E-mail: secretariat@lille2007.com

Acknowledgements
The organisers would like to express their gratitude to the national nuclear waste organisations NAGRA (Switzerland), ONDRAF.NIRAS (Belgium), SKB (Sweden), for their financial contribution, and to the Nuclear Energy Agency of the OECD for their support of the meeting.
Introduction

The international meeting on “Clays in Natural and Engineered Barriers for Radioactive Waste Confinement” will take place from 17 to 20 September 2007 at the International Conference Centre “Lille Grand Palais” (http://www.lillegp.com) in Lille, France.

Following the success of the two earlier meetings – respectively held in Reims (December 2002) and Tours (March 2005), the subsequent edition of 144 papers in the meeting proceedings¹, as well as the growing interest of the international scientific community regarding this subject, the Scientific Committee of the meeting – in agreement with the overall opinion of the participants – recommended the organization of this third meeting.

The purpose of this meeting is once again to bring together specialists in the different disciplines related to clays and clay minerals, and scientists from organizations involved in disposal of radioactive waste, in order to evaluate the progress of research conducted in that important field.

More than 300 abstracts from 26 different countries have been submitted for the meeting, from which 82 oral presentations have been selected. They will be presented in 15 thematic sessions, highlighting the current evolution and orientation of research focusing on the major questions remaining in this field: general strategy & clay-based disposal concepts, large-scale argillite characterisation, alkaline perturbation, Iron/clay interactions, gas and liquid transfer, pore water chemistry, thermal an oxidation effects, retention and sorption processes & geochemical modelling, diffusion processes, excavation damaged zone (EDZ) characterisation and evolution, hydro–mechanical (HM) processes, coupled thermo-hydro–mechanical (THM) and chemical (THM-C) processes, and, last but not least, Integration approaches in the perspective of global repository performance assessment (PA).

In order to enhance the integration of the different application domains, the thematic sessions will include presentations on: the geological barrier (GB), the engineered barrier system (EBS), in-situ experiments in underground research laboratories (URLs), methodological development of experiments in “surface laboratories”, as well as presentations specifically devoted to the development of numerical modeling.

In parallel with these oral sessions, more than 200 posters will be presented, illustrating the broad scope of activities in the field of clay properties for nuclear wastes confinement. Posters will remain in place throughout the entire conference for your convenience.

We are confident that, as it was already the case in Reims and Tours, this third meeting will provide a precious forum for exchange and discussion, profiting advances in the diverse fields of investigation, and development of new collaborations between the participants.

Looking forward to having the pleasure of seeing you in Lille.

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¹ Elsevier ed.: Physics and Chemistry of the Earth (vol. 29, 2004), Applied Clay Science (vol. 26, 2004) ; Physics and Chemistry of the Earth (Vol. 32, 2007), Andra : Sciences and Technology series (n° 235, 2004).

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The International Year of Planet Earth (2007–2009) is an ambitious programme, endorsed by 191 member states of the United Nations Organisation. It has been designed to foster research and outreach activities with the single purpose of raising worldwide public and political awareness of the vast (but often under–used) potential of Earth Sciences for improving the quality of life and safeguarding the planet. Its desired general outcomes are raising public awareness and enhancing research, in both less developed countries and developed nations, with all the attendant capacity building this will entail. Among a range of objectives, the International Year aims to:

→ Reduce risks caused by natural and human-induced hazards
→ Reduce health problems by improving understanding of the medical aspects of Earth Science
→ Discover new natural resources and make them available in a sustainable manner
→ Build safer structures and expand urban areas, utilizing natural subsurface conditions
→ Determine the non–human factor in climatic change
→ Inform more about the occurrence of natural resources (as groundwater)
→ Improve understanding of conditions on ocean floors relevant to the evolution of life.

→ More information on www.esfs.org/ & www.anneeplaneterre.com/
Welcome to Lille
(by the courtesy of the Tourism Office of Lille)

Lille: a surprise around every corner!

At only 1hr40 from London, 1 hour from Paris and 38 minutes from Brussels, Lille is an ideal destination for a short break. A unique mix between Flemish traditions and French “art de vivre”, the town offers an amazing variety of architecture and is a crossroads of different cultures.

Markets and regional food and drink specialities will also represent a delicious part of your stay.

In the narrow cobbled streets of the old city, among the masterpieces of the museums, between the futuristic towers of Euralille, in the midst of the colourful stalls of the Wazemmes market, in the numerous bars, “estaminets” and restaurants, there’s a surprise around every corner! All of these attractions are found in the warm atmosphere of a lively and welcoming city, at the rhythm of festivities which punctuate every season.
Lille’s heritage: selected sites and monuments

Lille really deserves its title of City of Heritage and Art. Besides its colourful Flemish architecture and its narrow ornamented facades, Lille has a rich and varied heritage.

French classical style houses sit alongside the eclectism of “Grands Boulevards”, or even the “Maisons Folie” – these former textile factories that are experiencing a new start as cultural and meeting centres.

→ The Palais Rihour is the only architectural reminder of the period during which the dukes of Burgundy ruled over Lille. Begun in 1453 by Philippe the Good, it was completed 20 years later by his son Charles the Bold. Damaged by fire in 1700 and largely redesigned by the Lille architect Charles Benvignat in 1846, it was home to the town hall until the accidental fire of 1916. The “Salle des Gardes” (Tourism Office) is open every day.

→ Rue Rihour, between the Place Rihour and the Grand Place, allows us to follow the evolution in Lille’s architecture through two facing rows of houses. The even–numbered row was built in around 1687. The odd–numbered row was built nearly fifty years later and already illustrates French tastes through the simplicity of its lines and the almost exclusive use of stone.

→ The Grand Place (Place du Général de Gaulle), has always been the beating heart of the city. In the city’s early days it was the forum or market place, as can be seen from the few old paving stones at the foot of the Goddess column. Despite their eclecticism, the facades of the Grand Place form a harmonious whole and offer an interesting view of Lille’s architecture from the 17th to the 20th Centuries.

→ The Vieille Bourse is without doubt the finest monument in the city. Started in 1652 by Julien Destrée, the building, beneath its apparent unity, is in fact made up of twenty–four identical houses, built at the expense of twenty–four merchants. The abundant sculpted decor of the multicoloured facades offers an infinite variety of pilasters animated by Atlases and Caryatids. Above the windows, the arched or triangular pediments are adorned with paunchy cartouches, garlands of flowers and fleshy fruits in the style of the Flemish Renaissance.

Many other sites and monuments deserve a visit, like: The Goddess column, memorial of the siege of Lille by the Austrians in September 1792; La Grand Garde (Théâtre du Nord), built in 1717 by Thomas Joseph Gombert, example of a new style of classical architecture into a Flemish city, The Place du Théâtre, The Opera House, The Chamber of Commerce, The Beauregard row, The Notre-Dame de la Treille Cathedral, the Town Hall and its belfry, The “Maisons Folie”

September in Lille: Main events

→ The “Braderie de Lille” (Flea market) : 33 hours of buying and selling in Europe’s biggest Flea Market. 100 km of stalls, 10,000 vendors and 1 to 2 million visitors! And of course the famous “moules-frites” (mussels and chips) which give restaurant owners a chance every year to take part in the competition to see who can build the highest pile of empty shells. A feast for the eyes! (Organisation: Ville de Lille / Tourist Office / +33 (0)3.59.57.94.18 / presse@lilletourism.com)

→ The fortified sites on all fronts (7 July > 7 October – Hospice Comtesse Museum). Exhibition about the changes brought to urban development in the fortified sites of Northern France from the Vauban period until today. (Organisation: Archives départementales du Nord)
Registration for the meeting

On-line credit card registration will be possible via the web-site (recommended).

For other means of payment, you may also pay using the registration form attached to this bulletin.

All participants will receive the book of abstracts (and CD-ROM). Registration fees also include the icebreaker, conference dinner, lunches and coffee breaks.

Registered accompanying persons can attend the icebreaker, concert, conference dinner and the social programme.

Cancellation and refunds

If cancellation is received before August 17th 2007, the registration fee will be refunded, minus a cancellation fee of 50€. All refunds will be made after the meeting. No refunds can be made for requests made after that date.

Conference registration desk

A conference registration desk will be open on Sunday 16th September 2007 from 18 h 00–21 h 00, during the ice breaker in the Congress Centre in the “Jeanne de Flandre” hall.

During the meeting, the registration desk will be open from 8:30 onwards at the Congress Centre.

Please, note that the deadline for registration and hotel booking is: August 17th 2007

Registration to the meeting will be still possible after that date, however, the meeting secretariat will no longer be able to guaranty your accommodation preference.

Payment

You can access the online registration form through the meeting web site: http://www.lille2007.com/ (fees are indicated on the registration form).
Preparing your contribution

Poster presentations

The poster exhibition will be held in the “Espace Flandres” hall from Monday to Thursday between 2pm and 3pm. One display board will be provided for each poster. Assistance and mounting materials will be available.

Each poster has been assigned a reference number (indicated on the mail confirming the acceptance of your poster). The numbering code is as follows:
P=poster/name of session/Poster Number.

Posters must be mounted on the appropriate display board on Monday before 13 h 00 and removed before 14 h 00 on Thursday.

Guidelines for posters

- Size should not exceed 120 cm high and 85 cm wide.
- The lettering should be readable from at least 1 m distance.
- Text should be kept to a minimum, while figures and tables should be large.

Proceedings

Proceedings will be published, after a classical review process, in special issues of highly ranked scientific journals (possibly, as it was the case for the proceedings of Reims-2002, and Tours-2005 in a scientific journal of the Elsevier Editors).

Both poster and oral presentations may qualify for inclusion.

You will find, for example, the instructions to author for Applied Clay Sciences on the web site of Elsevier at:
http://authors.elsevier.com/GuideForAuthors.html?Publd=503322

Manuscripts (with the electronic copy) should either be given to the Meeting Secretariat during the meeting, or send to:
Andra /Meeting Lille 2007,
Catherine BERGDOLL, 1–7 rue Jean-Monnet,
F-92298 Châtenay-Malabry Cedex,
E-mail: secretariat@lille2007.com,
Fax: +33 (0)1.46.11.84.10

Deadline submission of full papers:
September, 20th 2007

Please keep in mind that a rapid publication of the meeting Proceedings will require strict compliance with this calendar.

Language

The official meeting language is English. There will be no simultaneous translation.

Oral presentations

Technical facilities will include slide and overhead projectors as well as LCD computer projectors in each conference room. A projectionist will be assigned to each lecture room. Lecturers can preview and rehearse their presentation in a fully-equipped “preview” room.

Presentations are scheduled for 15 minutes plus 5 minutes dedicated to questions. Speakers are reminded of the importance of using clear and high quality material for projection.

Except for the opening sessions (Monday morning), all sessions will be on the same time frame. It is essential that all speakers keep on schedule.
Social activities

Participants & accompanying persons

Sunday, September 16
(18:00 to 21:00)
The icebreaker party will take place in the “Espace reflets” in the Congress Centre. Registration will be possible during the icebreaker.

Tuesday, September 18
(19:00 to 24:00)
The congress diner will take place in the “Espace Gobelîn”, in a former church in Roubaix.

Accompanying persons

Two half-day guided visits of the “Old Lille” – with English speaking guides – are proposed for the accompanying persons.

Visit I

The itinerary allows the discovery of the city’s heritage, history and life style through its main sites and monuments. Plunge in the charmest district of Lille, architecture, museums will seduce you. Lounge along the streets and the squares to discover the patrimony, the history and “art de vivre” of the town through its main sites and monuments: The Palais Rihour, the Main square, the Stock Exchange (Vieille Bourse), the Opera, the Chamber de Commerce, Hospice Comtesse Museum and Notre-Dame de la Treille Cathedral.

Visit II

We propose you the discover of the famous collections of the Fine Arts Museum of Lille: masterpieces by such great names as Donatello, Rubens, Véronèse, David, Goya and Delacroix.
General information

Weather

September in Lille may sometimes be quite chilly. Since some rain may be expected, we advise you bring a pull-over and a raincoat.

Shop and banking hours

Shops are generally open from 9:00 to 19:00, from Tuesday to Saturday. Most of the shops are closed on Sundays.

Visa

It is your responsibility to check if you need a visa for entering France. Check at your French Embassy or Consulate in your country.

Liability

The Organizing Committee cannot accept liability for personal accidents or loss for, or damage, to the private property of participants and accompanying persons, either during or indirectly arising from attendance to the International Meeting on “Clays in Natural and Engineered Barriers for Radioactive Waste Confinement”.

More information on
www.lille2007.com & www.lilletouris.com
### General time table

| Time          | Session                                                                 |
|---------------|-------------------------------------------------------------------------|
| 08:00 - 10:00 | Registration                                                            |
| 10:00 - 11:00 | Opening Ceremony                                                        |
| 11:00 - 13:00 | Oral session 1, Opening Lectures                                       |
| 13:00 - 14:20 | Lunch                                                                   |
| 14:20 - 15:00 | Poster sessions                                                         |
| 15:00 - 16:20 | Oral session 2a, General Strategy/Clay based Disposal Concepts          |
|               | Oral session 2b, Retention/Sorption & Geochemical Modelling             |
| 16:20 - 16:50 | Coffee break                                                            |
| 16:50 - 18:10 | Oral session 3a, Large Scale Geological Characterisation               |
|               | Oral session 3b, Thermo-Hydro-Mechanical Processes - 1                  |
| 19:00 - 23:10 |                                                          |
| TUESDAY 18               | WEDNESDAY 19                        | THURSDAY 20                          |
|--------------------------|------------------------------------|--------------------------------------|
| Oral session 4           | Oral session 8                     | Oral session 12                      |
| Gas & Liquid Transfer    | Transport Processes & Modelling    | Hydro-Mechanical Processes - 3       |
|                          |                                   |                                      |
| Coffee break             |                                   |                                      |
| Oral session 5           | Oral session 9                     | Oral session 13                      |
| Porewater Chemistry      | Excavation Damaged Zone - 1        | Integration/PA                       |
|                          |                                   |                                      |
| Lunch                    |                                   |                                      |
|                          |                                   |                                      |
| Poster sessions          |                                   |                                      |
| Oral session 6a          | Oral session 6b                    | Oral session 10a                     |
| Thermal & Oxidation Effects | Hydro-Mechanical Processes - 1   | Excavation Damaged Zone - 2          |
| Oral session 7a          | Oral session 7b                    | Oral session 11a                     |
| Iron/Clay Interactions   | Hydro-Mechanical Processes - 2     | Excavation Damaged Zone - 3          |
|                          |                                   | Oral session 11b                     |
|                          |                                   | Thermo-Chemical-Mechanical & Chemical Processes |
|                          |                                   |                                      |
| Coffee break             |                                   |                                      |
|                          |                                   |                                      |
| Congress Diner           |                                   |                                      |
MONDAY SEPTEMBER 17, morning

Auditorium Pasteur

10 h 00 – 11 h 00 → OPENING CEREMONY

SESSION 01 OPENING LECTURES
Chair: Patrick Landais

11 h 00 – 11 h 30 → The Meuse/Haute-Marne Underground Research Laboratory: seven years of scientific investigations
J. Delay, P.L. Forbes, J. Roman
Andra, France

11 h 30 – 12 h 00 → CLAYTRAC project: evaluation of tracer profiles across argillaceous formations
M. Mazurek¹, P. Alt-Epping¹, A. Bath², S. Buschaert³, A. Gautschi^d,
T. Gimmi⁴, H. N. Weber¹
¹ Institute of Geological Sciences, University of Bern, Switzerland /² Intellisci, UK /³ Andra, France /^d Nagra, Switzerland

12 h 00 – 12 h 30 → Correspondence between sorption measured on compacted and dispersed systems and sorption model predictions
M.H. Bradbury, B. Baeyens
P. Scherrer Institute, Laboratory for Waste Management, Switzerland

12 h 30 – 13 h 00 → Clay seals in CO₂ storage
J.P. Gerling¹, B.M. Krooss², A. Busch², H.D. Vosteen¹, K. Reinhold¹
¹ BGR, Germany /² RWTH, Aachen University, Germany

13 h 00 – 14 h 20 → Lunch (Espace Jeanne de Flandre)

14 h 20 – 15 h 00 → POSTER SESSION (Espace Flandres)

Remark: Full organisations names and authors addresses are available in the book of abstracts.
MONDAY SEPTEMBER 17, afternoon

Auditorium Pasteur

SESSION 02A  GENERAL STRATEGY / CLAY BASED CONCEPTS
Chair: Jean-Paul Minon / Alan Hooper

15 h 00 - 15 h 20 → Ontario Power Generation’s proposed deep geologic repository for low and intermediate level radioactive waste, Bruce site, Ontario, Canada
O/02A/1
M.R. Jensen, F.K. King
Ontario Power Generation, Ontario, Canada

15 h 20 - 15 h 40 → Design and realisation of the PRACLAY experimental gallery at the Hades URF
O/02A/2
W. Bastiaens, F. Bernier
EIG Eundice, Belgium

15 h 40 - 16 h 00 → Extension of the Mont Terri Rock Laboratory and experiment programme
O/02A/3
P. Bossart1, H. J. Alheid2, J. Delay3, E. Frank4, M. Hugi5, K. Kiho6, T. Rothfuchs2
1 Swisstopo, Switzerland / 2 BGR, Germany / 3 Andra, France / 4 HSK, Switzerland / 5 Nagra, Switzerland / 6 CNEP, Japan / 7 GRF, Germany

16 h 00 - 16 h 20 → European bentonites as alternatives to MX-80
O/02A/4
D. Koch
S&B Industrial Minerals GmbH, Germany

→ Coffee break

SESSION 03A  LARGE SCALE GEOLOGICAL CHARACTERISATION
Chair: Andreas Gautschi / Hervé Chamley

16 h 50 - 17 h 10 → Seismic imaging of the variability in the Callovo-Oxfordian argillite
O/03A/1
D. Guillemet, B. Yven
Andra, France

17 h 10 - 17 h 30 → Identification of homogeneous zones from well logging measurements by statistical tools
O/03A/2
A. Marache1, J. Riss1, A. Denis1, B. Yven2, A. Trouiller2
1 University Bordeaux 1, France / 2 Andra, France

17 h 30 - 17 h 50 → Geostatistical characterization of Callovo-Oxfordian clay variability from high resolution log data
O/03A/3
M. Lefranc1,2, B. Beaudoin3, J.P. Chilès2, D. Guillemet1, C. Ravenne3, A. Trouiller1
1 Andra, France / 2 Ecole des Mines de Paris, France / 3 Institut Français du Pétrole, France

17 h 50 - 18 h 10 → Magnetic properties, magnetic mineralogy and fabric of the argillites of the Meuse/Haute-Marne URL
O/03A/4
J.L. Bouchez1, L. Esteban1,2,3,4, Y. Géraud2, A. Trouiller3, R. Siqueira1
1 University Toulouse, France / 2 University Strasbourg, France / 3 Andra, France / 4 Geological Survey of Canada-Pacific, Canada
MONDAY SEPTEMBER 17, afternoon

Auditorium Eurotop

SESSION 02B  RETENTION/SORPTION & GEOCHEMICAL MODELLING
Chair: Ann Dierckx / Eric Giffaut

15 h 00 - 15 h 20 → Long-term geochemical evolution of the near field of a KBS-3 HLNW repository: insights from reactive transport modelling
D. Arcos¹, F. Grandia¹, C. Domèneche¹, P. Sellin²
¹ Enviros, Spain / ² SKB, Sweden

15 h 20 - 15 h 40 → Investigation of iron transport into bentonite from anaerobically corroding steel: a geochemical modelling study
F.M.I. Hunter¹, F. Bate¹, T.G. Heath¹, A. Hoch¹, L.O. Werme²
¹ Serco Assurance, United Kingdom / ² SKB, Sweden

15 h 40 - 16 h 00 → SeO₃²⁻ adsorption on conditioned Na-illite: XAS spectroscopy, kinetics, surface complexation model and influence of compaction
C. Bruggeman¹, ³, A. Maes¹, G. Montavon², E. Breynaert¹, Z. Guo², J. Vancluyssen¹
¹ Katholieke Universiteit Leuven, Belgium / ² École des Mines de Nantes, France / ³ SCK·CEN, Belgium

16 h 00 - 16 h 20 → Influence of temperature and gamma-irradiation on the anion sorption capacity of modified bentonites
B. Riebe, C. Bunninenberg, A. Meleshyn, S. Dultz
Leibniz University Hannover, Germany

→ Coffee break

SESSION 03B  THERMO HYDRO MECHANICAL (THM) PROCESSES
Chair: Pierre Delage / Antonio Gens

16 h 50 - 17 h 10 → In-situ thermal experiments carried out in Opalinus clay and Callovo-Oxfordian claystones by Andra
Experiment set-up and measurement results
Y. Wileveau, K. Su
Andra, France

17 h 10 - 17 h 30 → Characterization of the THM parameters of Callovo-Oxfordian mudstone by interpretation of an in-situ heating test
B. Garitte¹, A. Gens¹, J. Vaunat¹, Y. Wileveau²
¹ Technical University of Catalonia, Spain / ² Andra, France

17 h 30 - 17 h 50 → Temperature buffer test experimental and model results
M. Åkesson¹, A. Jacinto², A. Ledesma², M. de Combarieu³
¹ Clay Technology AB, Sweden / ² Technical University of Catalonia, Spain / ³ Andra, France

17 h 50 - 18 h 10 → Dismantling of the mock-up-CZ experiment
J. Pacovsky, J. Svoboda, R. Vasicék
Faculty of Civil Engineering, Prague, Czech Republic
SESSION 04  GAZ AND LIQUID TRANSFER
Chair: Paul Marschall / Scott Altmann

8 h 30 - 8 h 50 → Gas migration through bentonite/sand:
Lessons learned from the GMT in-situ test
T. Shimura1, S. Vornvors1, G.W. Lanyon1, P. Marschall2, K. Ando4,
S. Yamamoto4, H. Asano1
1 RWMC, Japan / 2 Nagra, Switzerland / 3 Fracture Systems Ltd, Japan / 4 Obayashi Corporation, Japan

8 h 50 - 9 h 10 → Modeling approaches of two-phase flow phenomena associated with
corrosion of SF/HLW canisters in a proposed repository in Opalinus clay,
Switzerland
R. Senger1, T. Xu2, P. Marschall3, S. Finsterle2
1 Intera Incorporated, USA / 2 Lawrence Berkeley National Laboratory, USA / 3 Nagra, Switzerland

9 h 10 - 9 h 30 → Approaches for modelling gas transport in clay formations based
on improved Darcy and non-Darcy flow concepts
H. Alkan, W. Müller
Institute for Safety Technology (ISTEC), Germany

9 h 30 - 9 h 50 → Deriving large scale hydraulic behaviour from borehole pressure history
data
C. Enachescu, J. Delay, M. Cruchaudet, R. de la Vaissiere
Andra, France

9 h 50 - 10 h 10 → Interpretation of interstitial pressures in clay media:
Application to the Callovo-Oxfordian
P. Rousseau-Gueutin1,2, J. Gonçalvês1, M. Cruchaudet2, S. Altmann2, V. de Greef3,
S. Violette1
1 UMR 7619 Sisyphe, Paris, France / 2 Andra, France / 3 UMR 7649 LMS, France

10 h 10 - 10 h 30 → Porosities accessible to HTO and iodide on water-saturated compacted
clay materials and relation with the states of water
G. Montavon1, E. Alhajji1, D. Lebotian2, Z. Guo1, C. Tournassat3, B. Grambow2
1 Subatech, France / 2 LAEM, France / 3 BRGM France

→ Coffee Break
TUESDAY SEPT EM BER 18, Morning

Auditorium Pasteur

SESSION 05  PORE-WATER CHEMISTRY
Chair: Pedro Hernan / Catherine Beaucaire

11 h 00 - 11 h 20 ➔ CO₂ data on gas and porewater sampled in-situ in the Opalinus clay at the Mont Terri rock laboratory
A. Vinsot¹, C.A.J. Appelo², C. Cailletau³, ⁴, ⁵, S. Mettler⁶, P. Wersin⁶, P. De Cannière⁷, H.-E. Gäbler⁸
¹ Andra, France / ² MB Amsterdam, The Netherlands / ³ LEM, ENSG/INPL, France / ⁴ CQR-CREGU, CNRS, France / ⁵ Andra, France / ⁶ Nagra, Switzerland / ⁷ SKK-CEN, Belgium / ⁸ BGR, Germany

11 h 20 - 11 h 40 ➔ Improvements in the modelling of the porewater chemistry of the Callovo-Oxfordian formation
F. C. Gaucher³, C. Tournassat¹, E. Jacquot², S. Altmann², A. Vinsot²
¹ BRGM, France / ² Andra, France

11 h 40 - 12 h 00 ➔ Nature and reactivity of dissolved organic matter in the Opalinus clay and Callovo-Oxfordian formations
A. Courdouan¹, I. Christl¹, P. Wersin², R. Kretzschmar¹
¹ Institute of Biogeochemistry and Pollutant Dynamic, Switzerland / ² Nagra, Switzerland

12 h 00 - 12 h 20 ➔ PH4: a 250 m deep borehole in Tournemire for assessing the reliability of chloride, helium and water stable isotopes profiles in the Toarcian/Domerian shales
S. Savoye¹, J.L. Michelot², H.N. Weber³, J.M. Matray¹, F. Bensenouci¹, ², Ch. Wittebroodt¹, ², J. Cabrera¹
¹ IRSN, France / ² LMR IDES CNRS-University Paris-Sud, France / ³ Rock-Water Interaction, Switzerland / ⁴ MSE, University Montpellier 2, France

12 h 20 - 12 h 40 ➔ Development of a new facility for dating old groundwaters by using ⁸¹Kr
B. Laville¹, E. Gilabert¹, B. Thomas¹, V. Lavastre¹, ²
¹ University Bordeaux 1-2, France / ² University Nîmes, CNRS, France

12 h 40 - 14 h 00 ➔ Lunch (Espace Jeanne de Flandre)

14 h 00 - 15 h 00 ➔ POSTER SESSION (Espace Flandres)
SESSIO 06A  THERMAL AND OXIDATION EFFECTS
Chair: Anna Maria Fernandez / Norbert Clauer

15 h 00 - 15 h 20 → Alteration processes in bentonites; mineralogical and structural changes during long-term and short-term experiments
J. Adamcová1,2, I. Kolaříková1
1 Institute of Geochemistry, Faculty of Science, Czech Republic / 2 Czech Geological Survey, Czech Republic

15 h 20 - 15 h 40 → Implications from the lot experiment regarding the selection of an optimum HLRW bentonite
S. Kaufhold1, R. Dohrmann1,2
1 BGR, Germany / 2 LBE, State Authority for Mining, Energy, and Geology, Germany

15 h 40 - 16 h 00 → Extent of oxidation in Boom clay as a result of excavation and ventilation of the HADES UR: Experimental and modelling assessments
M. De Craen1, M. Van Geet1,2, M. Honty1, L. Wang1, E. Weetjens1
1 SCK-CEN, Belgium / 2 ONDRAF/NIRAS, Belgium

16 h 00 - 16 h 20 → Magnetic and mineralogical alterations under thermal stress at 95°C of Callovo-Oxfordian claystones (Bure, France) and lower Dogger Mont Terri claystones (Switzerland)
J.P. Pozzi1, C. Aubourg2, D. Janots1, M. Cathelineau3, N. Clauer4, D. Rousset3, R. Ruck3, N. Liewig2, I. Techer6
1 CNRS, France / 2 CNRS, France / 3 CNRS G2R, France / 4 CNRS CGS, France / 5 CNRS Institut pluridisciplinaire, France / 6 CNRS Cérèse, France

→ Coffee break

SESSIO 07A  IRON CLAY INTERACTIONS
Chair: Reiner Dohrmann / Michel Cathelineau

16 h 50 - 17 h 10 → Effects of temperature, pH, iron/clay ratio and liquid/clay ratio on the conversion of di-octahedral smectite into iron-rich clays: a review of experimental studies
M. Cathelineau1, R. Mosser–Ruck1, D. Rousset1, D. Guillaume2, D. Charpentier3, K. Devineau5, F. Villieras4, N. Michau5
1 Géologie et Gestion des Ressources Minérales et Énergétiques, France / 2 LMTG, UMR 5563 CNRS–UPS-IRD, France / 3 Département de Géosciences, University Franche-Comté, France / 4 Laboratoire Environnement et Minéralogie, Institut National Polytechnique de Lorraine, France / 5 ANDRA, France

17 h 10 - 17 h 30 → Modelling iron/bentonite interactions
D. Savage1, C. Watson1, S. Benbow1, J. Wilson2
1 Quintessa Ltd, UK / 2 Health Protection Agency, UK

17 h 30 - 17 h 50 → Impact of iron on the bentonite buffer within the KBS-3H disposal concept: results from reactive transport modelling
P. Wersin1, M. Birgersson2, M. Snellman3
1 Nagra, Switzerland / 2 Clay Technology, Sweden / 3 Saano & Riekko Oy, Finland

17 h 50 - 18 h 10 → Characterization of a redox-modified clay mineral with respect to its suitability as a barrier in radioactive waste confinement
A.S. Anastácio1, A. Aoud1, P. Sellin2, J. W. Stucki1
1 Department of Natural Resources and Environmental Sciences, University of Illinois, USA / 2 SKB, Sweden
TUESDAY SEPTEMBER 18, afternoon

Auditorium Eurotop

SESSION 06B  HYDRO MECHANICAL PROCESSES - 1
Chair: Charles Fairhurst / Tilmann Rothfuchs

15 h 00 - 15 h 20 → Three-dimensional and time stepping modelling of the whole Meuse/
Haute-Marne Andra URL
F. Laouafia¹, J.-B. Kazmierczak¹, G. Armand², J. Vaunat³, M. Jobmann⁴, M. Polster⁴
¹ INERIS, France / ² Andra, France / ³ UPC-Technical University Catalonia, Girona, Spain / ⁴ DBETEC - DBE Technology GmbH, Germany

15 h 20 - 15 h 40 → Constitutive model for a deep argillaceous rock using Hoek-Brown
criteria
K. Su¹, C. Chavant², M. Souley³
¹ Andra, France / ² EDF, France / ³ INERIS, France

15 h 40 - 16 h 00 → Long term behaviour of the Boom clay: influence of viscosity
on the pore pressure distribution
C. Coll¹, R. Charlier¹, X.L. Li², F. Collin¹
¹ University Liège, Belgium / ² ESV EURIDICE, SCK.CEN, Belgium

16 h 00 - 16 h 20 → Microstructural changes induced by viscoplastic deformations
in argillaceous rocks
F.L. Pellet¹, G. Fabre¹, K. Su², P. Lebon²
¹ University Joseph Fourier, France / ² Andra, France

→ Coffee break

SESSION 07B  HYDRO MECHANICAL PROCESSES - 2
Chair: Christian Schroeder / Mehdi Ghoreyshi

16 h 50 - 17 h 10 → The engineered barrier experiment at Mont Terri rock laboratory
J.-L. García-Siñeriz¹, M. Rey¹, J.-C. Mayor²
¹ AITEMIN, Spain / ² ENRESA, Spain

17 h 10 - 17 h 30 → Chemical influence on the Hydro-Mechanical behaviour
of high-density FEBEX bentonite
E. Castellanos¹, M.V. Villar², E. Romero¹, A. Lloret¹, A. Gens¹
¹ University Politécnica de Catalunya, Spain / ² CIEMAT, Spain

17 h 30 - 17 h 50 → Influence of water exchanges on the gallery convergence
P. Gerard¹, R. Charlier¹, R. Chambon², F. Collin¹
¹ University Liège, Belgium / ² Laboratoire 3S, CNRS, France

17 h 50 - 18 h 10 → New method for ageing resistant storage of argillaceous rock samples
to achieve reproducible experimental results even after long intermediate storage times
O. Czaikowski, K.-H. Lux
Clausthal University, Germany
WEDNESDAY SEPTEMBER 19, Morning

Auditorium Pasteur

SESSION 08  TRANSPORT PROCESSES & MODELLING
Chair: Joseph Stucki / Christophe Poinssot

8 h 30 - 8 h 50 → Anion exclusion effects in compacted bentonites: towards a better understanding of anion diffusion
O/08/1
L. R. Van Loon, Martin A. Glaus, Werner Müller
Paul Scherrer Institut, Switzerland

8 h 50 - 9 h 10 → High performance FVFE multidomain numerical method. Application to radionuclide transport through geological layers
O/08/2
M. Dymitrowska, M. Bourgeois, G. Mathieu
IRSN, France

9 h 10 - 9 h 30 → Impact of bentonite extrusion on radionuclide migration in a saturated planar fracture
O/08/3
R.A. Borrelli, J. Ahn
Department of Nuclear Engineering, University of California, USA

9 h 30 - 9 h 50 → The DI-B in-situ diffusion experiment at Mont Terri: results and modelling
O/08/4
J.M. Soler¹, J. Samper², A. Yllero³, A. Hernández³, A. Quejido³, M. Fernández³, C. Yang³, A. Naves³, P. Hernán⁴, P. Wersin⁵
¹ ICTJA-CSIC, Spain / ² University A Coruña, Spain / ³ CIEMAT, Spain / ⁴ ENRESA, Spain / ⁵ Nagro, Switzerland

9 h 50 - 10 h 10 → In-situ diffusion test in Opalinus clay with tritium, anionic and cationic tracers: comparison with laboratory experiments and modelling
O/08/5
P. Wersin¹, J. Soler², L. Van Loon³, S. Dewonck³, J. Eikenberg³, B. Baeyens³, D. Grolimbund³, T. Gimmi³
¹ Nagro, Switzerland / ² CSIC-IJN, Spain / ³ PSI, Switzerland / ⁴ Andra, France

10 h 10 - 10 h 30 → Osmotic experiment at the Meuse/Haute-Marne URL (France)
O/08/6
M. Cruchaudet¹, J. Croisê², J.M. Lavanchy²
¹ Andra, France / ² Colenco Power Engineering AG, Switzerland

→ Coffee Break
SESSION 09  EXCAVATION DAMAGED ZONE - 1

Chair: Peter Blumling / Jean-François Aranyossy

11 h 00 - 11 h 20  
Autochthonous and colonizing microorganisms in argillaceous underground environments
S. Poulain1,2, C. Sergeant1, C. Le Marrec3, M.-H. Vesvres1, A. Vinsot2, S. Dewonck2, M. Simonoff1, S. Altmann2
1 University Bordeaux, CNRS, GdR FORPRO, France / 2 Andra, France / 3 ISTAB, University Bordeaux 1, INRA, France

11 h 20 - 11 h 40  
Discrete fracture network modelling of the Hg-a experiment at the Mont Terri rock Laboratory
G.W. Lanyon1, P. Marschall2, T. Vietor2
1 Fracture Systems Ltd, UK / 2 Nagra, Switzerland

11 h 40 - 12 h 00  
Discrete modelling of drift behaviour in the Meuse/Haute-Marne URL (France)
C. Bourdeau, F. Dedecker, D. Billaux
ITASCA Consultants, France

12 h 00 - 12 h 20  
Fracturation in Callovo-Oxfordian argillite under triaxial compression studied by X-ray microtomography
N. Lenoir1,2, J. Desrues1, G. Viggiani1, P. Bésuelle1, M. Bornert3, J.D. Barnichon2
1 Laboratoire 3S-R, France / 2 Andra, France / 3 Laboratoire de Mécanique des Solides, Ecole Polytechnique, France

12 h 20 - 12 h 40  
A general review of the damage models for the EDZ creation
C. Arson1, B. Gatmiri1,2
1 CERMES, France / 2 University of Tehran, IRAN

12 h 40 - 14 h 00  
Lunch (Espace Jeanne de Flandre)

14 h 00 - 15 h 00  
POSTER SESSION (Espace Flandres)
WEDNESDAY SEPTEMBER 19, afternoon

Auditorium Pasteur

SESSION 10A  EXCAVATION DAMAGED ZONE - 2
Chair: Hans-Joachim Alheid / Patrick Lebon

15 h 00 - 15 h 20  →  Similarities in the Hydro-Mechanical response of Callovo-Oxfordian clay and Boom clay during gallery excavation
O/10A/1
Y. Wileveau¹, F. Bernier²
¹Andra, France / ²ESV EURIDICE GIE, Belgium

15 h 20 - 15 h 40  →  Why are the geometries of the EDZ fracture networks different in the Mont Terri and Meuse/Haute-Marne rock laboratories? Structural approach
O/10A/2
C. Nussbaum¹, Y. Wileveau², P. Bossart³, A. Móni¹, G. Armand²
¹Geotechnical Institute Ltd., Switzerland / ²Andra, France / ³Swisstopo, Switzerland

15 h 40 - 16 h 00  →  Characterisation of the Excavation-Damaged Zone in the Meuse / Haute-Marne Underground Research Laboratory
O/10A/3
G. Armand, P. Lebon, M. Cruchaudet, H. Rebours, J. Morel, Y. Wileveau
Andra, France

16 h 00 - 16 h 20  →  EDZ characterisation with ultrasonic interval velocity measurements in the Meuse/Haute-Marne URL, performed between depth of 85m and 504m
O/10A/4
K. Schuster, H.-J. Alheid
BGR, Germany

→ Coffee break

SESSION 11A  EXCAVATION DAMAGED ZONE - 3
Chair: Till Popp / Jean-Dominique Barnichon

16 h 50 - 17 h 10  →  Clay formation at the Meuse Haute Marne URL: evaluation of the impact of resin filled slots on flow paths characteristics within the EDZ
O/11A/1
J.M. Lavanchy¹, J. Croisé¹, R. Schwarz¹, G. Armand², M. Cruchaudet²
¹Colenco Power Engineering AG, Switzerland / ²Andra, France

17 h 10 - 17 h 30  →  Caractérisation et évolution de l’EDZ by extraction and analyse of noble gases in pore waters in the Meuse/Haute Marne URL site
O/11A/2
B. Lavielle, B. Thomas, E. Gilabert
University Bordeaux 1-2, France

17 h 30 - 17 h 50  →  In-situ gas test for the characterisation of Excavation Disturbed Zone at the Meuse/Haute Marne URL
O/11A/3
H. Shaq, K. Schuster, J. Sönke, V. Bräuer
Federal Institute for Geosciences and Natural Resources (BGR), Germany

17 h 50 - 18 h 10  →  Flow and reactive transport model of a ventilation experiment in Opalinus Clay
O/11A/4
L. Zheng³, J. Samper³, L. Montenegro¹, J.C. Mayor²
¹University A Coruña, Spain / ²ENRESA, Spain
SESSION 10B  ALKALINE PERTURBATION  Chair: Reiner Dohrmann / Nicolas Michau

15 h 00 - 15 h 20  ➔ Effect of deviation from equilibrium on dissolution rate of smectite under hyperalkaline condition
O/10B/1  T. Sato¹, Y. Otani¹, H. Takayama¹, S. Yokoyama², C. Oda³, A. Honda³, T. Yoneda¹
¹ Graduate School of Engineering, Hokkaido University, Japan / ² Central Research Institute of the Electric Power Industry, Japan / ³ Japan Atomic Energy Agency, Japan

15 h 20 - 15 h 40  ➔ Influence of high pH fluid circulation on the mechanical behaviour of compacted clayey soil
O/10B/2  O. Cuisinier¹, F. Masrouri², M. Pelletier², F. Villeras²
¹ Laboratoire Central des Ponts et Chaussées, France / ² Institut National Polytechnique de Lorraine, France

15 h 40 - 16 h 00  ➔ Alteration of montmorillonites in saline solutions
O/10B/3  H.-J. Herbert¹, J. Kasbohm²
¹ Gesellschaft für Anlagen- und Reaktorsicherheit mbH, Germany / ² Ernst-Moritz-Arndt-Universität, Germany

16 h 00 - 16 h 20  ➔ Organic matter-metals (Ti, Cr, Fe) interactions at the Khushaym Matruk natural analogue (Central Jordan)
O/10B/4  M. Elie¹, I. Techer², L. Troitignon³, H. Khoury⁴, E. Salameh⁴, D. Vandamme⁵, P. Boulvais⁵, S. Fourcade⁵
¹ CNRS, University Nancy, France / ² UMR CNRS 6635-CEREGE, France / ³ CEA Cadarache, France / ⁴ Department of Geology, University of Jordan, Jordan / ⁵ UMR CNRS, 6118-Geosciences Rennes, France

Coffee break

SESSION 11B  THERMO HYDRO MECHANICAL & CHEMICAL PROCESSES  Chair: Eduardo Alonso / Frédéric Plas

16 h 50 -17 h 10  ➔ Geochemical behaviour of a bentonite barrier: results up to 8 years of Thermo-Hydraulic treatment in the laboratory
O/11B/1  A.M. Fernández, M.V. Villar, R. Gómez-Espina
CIEMAT – Centro de Investigaciones Energéticas, Spain

17 h 10 - 17 h 30  ➔ Coupled THMC model of FEBEX mock-up test
O/11B/2  L. Zheng, J. Samper
University of Coruña, Spain

17 h 30 - 17 h 50  ➔ Couplings of THMC phenomena in deep argillaceous rock of a radioactive waste repository
O/11B/3  A. Haxaire, I. Djeran-Maigre
LGCE, INSA de Lyon, France

17 h 50 - 18 h 10  ➔ A THMC framework to consider microstructural effects in the analysis of clay barriers
O/11B/4  L. do N. Guimarães¹, M. Sánchez², A.M. Fernández³, A. Gens⁴
¹ University Federal Pernambuco, Brazil / ² University Strathclyde, UK / ³ CIEMAT, Spain / ⁴ University Politécnica de Catalunya, Spain
SESSION 12  HYDRO-MECHANICAL PROCESSES - 3
Chair: Patrik Sellin / Charles Fairhurst

8 h 30 - 8 h 50 ➜ Installation and evaluation of a large-scale in-situ shaft seal experiment in Boom clay – the RESEAL project
O/12/1
M. Van Geet1, W. Bastiaens1, G. Volckaert1, E. Weetjens1, X. Sillen1, A. Gens2, M.V. Villar3, Ch. Imbert4, M. Filippi4, F. Plas5
1 SCK-CEN, Belgium / 2 UPCE, 8034 Barcelona, Spain / 3 CIEMAT, Spain / 4 CEA, France / 5 ANDRA, France

8 h 50 - 9 h 10 ➜ Hydro-Mechanical response of the Callovo-Oxfordian mudstone around a deep vertical drift
O/12/2
J. Vaunat1, B. Garitte1, A. Gens1, K. Su2, G. Armand2
1 Technical University Catalonia, Spain / 2 Andra, France

9 h 10 - 9 h 30 ➜ Sensitivity of total stress to changes in externally applied water pressure in KBS-3 buffer bentonite
O/12/3
J.F. Harrington1, D.J. Birchall1, P. Sellin2
1 British Geological Survey, UK / 2 SKB, Sweden

9 h 30 - 9 h 50 ➜ Comparison of the poroelastic behavior of Meuse/Haute Marne and Tournemire argillites: effect of loading and saturation states
O/12/4
E. Bemer1, A. Noiret1, F. Homand2, A. Rejeb3
1 IFP, France / 2 Institut National Polytechnique de Lorraine, France / 3 IRSN, France

9 h 50 - 10 h 10 ➜ Multiscale modelling of the argillites mechanical behaviour
O/12/5
A. Abou-Chakra Guéry1,2, F. Cormery2, K. Su2, J.F. Shao2, D. Kondo2
1 Laboratoire de Mécanique of Lille, France / 2 Andra, France

Coffee Break
| Time          | Session                                                                 | Chair                        |
|--------------|-------------------------------------------------------------------------|------------------------------|
| 11h00 - 11h20 | Influence of the transport parameter uncertainty on the long-term safety of nuclear waste repositories in clay formations | Philippe Lalieux / Laurence Johnson |
|              | O/13/1                                                                 | A. Rübel, GRS, Germany       |
| 11h20 - 11h40 | Transferability of external information to clay- and shale-hosted sites - use for supporting safety cases | M. Mazurek¹, A. Gautschi², P. Marschall², G. Vigneron³, P. Lebon³, J. Delay³ |
|              | O/13/2                                                                 | Rock-Water Interaction, University of Bern, Switzerland /² Nagra, Switzerland /³ Andra, France |
| 11h40 - 12h00 | Investigations on safety relevant repository design in German clay formations | M. Jobmann¹, L. Uhlig¹, P. Amelung¹, H. Schmidt¹, M. Polster¹, D. Billaux², P. Hoth³ |
|              | O/13/3                                                                 | DBE Technology, Germany /² ITASCA Consultants, France /³ Federal Institute for Geosciences and Natural Resources, Germany |
| 12h00 - 12h30 | CLOSURE CEREMONY                                                        | Patrick Landais              |
|              |                                                                        |                              |
| 12h30 - 14h00 | Lunch (Espace Jeanne de Flandre)                                        |                              |
Poster
SESSIONS

SEPTEMBER 17 - 20, 2007
LILLE
3rd INTERNATIONAL MEETING
P/GSI/01 - Assessment of backfill materials and methods for deposition tunnels
P. Kerto\textsuperscript{1}, D. Gunnarsson\textsuperscript{2}, L.-E. Johannesson\textsuperscript{3}, J. Hansen\textsuperscript{4}
\textsuperscript{1} Soanio & Riekkola Oy Consult. Eng., Finland / \textsuperscript{2} SKB, Sweden / 
\textsuperscript{3} Clay Techn., Sweden / \textsuperscript{4} POSIVA Oy, Finland

P/GSI/02 - HTV-1: a semi technical scale testing of a multi-layer hydraulic shaft sealing system
K. Emmerich\textsuperscript{1}, G. Kemper\textsuperscript{1}, F. König\textsuperscript{2}, S. Schläger\textsuperscript{3}, M. Gruner\textsuperscript{4}, M. Hofmann\textsuperscript{4}, R. Nüesch\textsuperscript{1,5}, R. Schuhmann\textsuperscript{1}
\textsuperscript{1} Univ. Karlsruhe, Germany / \textsuperscript{2} Inst. für Meteorologie und Klimaforschung, Karlsruhe, Germany / \textsuperscript{3} Schlaeger, Germany / \textsuperscript{4} Inst. für Bergbau und Spezialbeton, Freiberg, Germany / \textsuperscript{5} Inst. für Technische Chemie, Karlsruhe, Germany

P/GSI/03 - Development of water content adjust method by mixing powdered-ice and chilled-bentonite: application to the construction of bentonite engineered barriers by shotcrete method
I. Kobayashi\textsuperscript{1}, M. Toida, T. Sasakura
Technical Research Inst., Kajima Corporation, Japan

P/GSI/04 - Repository design issues related to the thermal impact induced by heat emitting radioactive waste
F. Bernier, X. L. Li
ESV EURIDICE CIE, Belgium

P/GSI/05 - Pillared clays, using Roumanian montmorillonite
I. D. Nistor\textsuperscript{1}, N. Doru Miron\textsuperscript{1}, T. Sajin\textsuperscript{1}, A. Azzouz\textsuperscript{2}, I. Siminiceanu\textsuperscript{3}, E. Panturiu\textsuperscript{4}, R. Rduitescu\textsuperscript{4}, C. Jinescu\textsuperscript{5}, P. R. Ioan\textsuperscript{5}
\textsuperscript{1} Bacau Univ., Romania / \textsuperscript{2} Quebec Univ. of Montreal, Canada / \textsuperscript{3} Technical Univ. of Iasi, Romania / \textsuperscript{4} Research & Development National Inst. for Metals and Radioactive Resources, Romania / \textsuperscript{5} Univ. Politehnica Romania

P/GSI/06 - Simulation of differential settlements of clay based engineered barrier systems in a geocentrifuge
B. V. S Viswanadham, S. Rajesh, S. S. Sengupta
Indian Inst. of Technology Bombay, Mumbai, India

P/GSI/07 - Critical issues regarding clay behaviour in the KBS-3H repository design
J. Autio\textsuperscript{1}, T. Sandén\textsuperscript{2}, L. Börghsson\textsuperscript{2}
\textsuperscript{1} Soanio & Riekkola Oy Consulting Engineers, Finland / \textsuperscript{2} Clay Technology AB, Sweden

P/GSI/08 - Alternative buffer material experiment
D. Svensson\textsuperscript{1}, A. Eng\textsuperscript{2}, P. Sellin\textsuperscript{1}
\textsuperscript{1} SKB, Sweden / \textsuperscript{2} Acuo

P/GSI/09 - Assessing the performance of a swelling clay tunnel seal and issues identified in the course of its operation
D. A. Dixon\textsuperscript{1}, J. B. Martino\textsuperscript{1}, B. Vignal\textsuperscript{2}, T. Fujita\textsuperscript{3}
\textsuperscript{1} AECL, Canada / \textsuperscript{2} Andra, France / \textsuperscript{3} JAEA, Japan

P/GSI/10 - Activation of a Ca-bentonite as buffer material
W.-H. Huang\textsuperscript{1}, W.-C. Chen\textsuperscript{2}, S.-R. Yang\textsuperscript{1}
\textsuperscript{1} National Central Univ., Taiwan / \textsuperscript{2} Atomic Energy Council, Taiwan

P/GSI/11 - Large diameter borehole type repository in the clays for radioactive waste long term storage
S. Dmitriev, L. Prozorov, Yu. Litinsky, A. Tkachenko, A. Guskov
State Unitary Enterprise MocSIA “Radon”

P/GSI/12 - Erosion of backfill materials during the installation phase
T. Sandén, L. Börghsson
Clay Technology AB, Sweden

P/GSI/13 - Behaviour of the clay cover of a site for very low level nuclear waste: field flexion tests
S. Camp\textsuperscript{1,3}, J. P. Gourc\textsuperscript{1}, O. Ple\textsuperscript{2}, J. L. Kaelin\textsuperscript{4}, A. Marchiol\textsuperscript{4}, C. Round\textsuperscript{3}
\textsuperscript{1} LTHE, France / \textsuperscript{2} 3S-R, France / \textsuperscript{3} SCETAROUTE, France / \textsuperscript{4} Andra, France

P/GSI/14 - Laboratory tests made on three different backfill candidates for the Swedish KBS-3V concept
L.-E. Johannesson, U. Nilsson
Clay Technology AB, Sweden

P/GSI/15 - Engineering geological clay research for radioactive waste repository in Slovakia
R. Adamcova\textsuperscript{1}, J. Frankovska\textsuperscript{2}, T. Durmekova\textsuperscript{1}, Z. Haasova\textsuperscript{1}
\textsuperscript{1} Comenius Univ. Bratislava, Slovakia / \textsuperscript{2} State Geological Inst. of Dionyz Stur, Slovakia

P/GSI/16 - ESDRED project, module 1 - Design, fabrication, assembly, handling and packaging of buffer rings
C. Gatabin\textsuperscript{1,2}, J.-L. Guyot\textsuperscript{2}, S. Resnikov\textsuperscript{3}
\textsuperscript{1} CEA, France / \textsuperscript{2} SEGULA Ingenierie, France / \textsuperscript{3} MPC, France

P/GSI/17 - Laboratory experiments on the sealing ability of bentonite pellets
O. Karland\textsuperscript{1,2}, U. Nilsson\textsuperscript{1}, H. Weber\textsuperscript{3}, P. Wersin\textsuperscript{3}
\textsuperscript{1} Clay Technology AB, Sweden / \textsuperscript{2} Lund Univ., Sweden / \textsuperscript{3} Nagra, Switzerland

Remark: Full organisations names and authors addresses are available in the book of abstracts.
Monday 17th to Wednesday 18th - 14:00 - 15:00

P/GSI/18 - Screening of bentonite resources for use as an engineered barrier component in deep geologic repositories
M.N. Gray¹, D.A. Dixon²
¹ IAEA, Austria / ² Atomic Energy of Canada Limited, Canada

P/GSI/19 - Assessment of the radionuclide release from the near-field environment of a spent nuclear fuel geological repository
A. Poulquesquen¹, J. Radwan, C. Poinsset, C. Ferry
CEA, France

P/GSI/20 - Emplacement tests with granular bentonite
H.P. Weber¹, M. Plötz²
¹ Nagro, Switzerland / ² Inst. for Geotechnical Engineering, Switzerland

SESSION: ALTERATION PROCESSES (AP)

P/AP/01 - Natural systems evidence for the alteration of clay under alkaline conditions
D. Savage¹, S. Benbow¹, C. Watson¹, H. Takase², C. Oda³, A. Honda³
¹ Quintessa Ltd, UK / ² Quintessa K.K., Japan / ³ JAEA, Japan

P/AP/02 - Stress corrosion cracking of carbon steel exposed to deep geological environment.
A. Didot¹, E. Herms¹, C. Bataillon¹, J. Chêne¹, D. Crusset²
¹ CEA, France / ² Andra, France

P/AP/03 - Microstructure of compacted argillite submitted to an alkaline plume
O. Cuisinier¹, F. Masrouri², M. Pelletier², F. Villers²
¹ Laboratoire Central des Ponts et Chaussées, France / ² Institut National Polytechnique de Lorraine, France

P/AP/04 - The effect of the high pH alkaline solutions on the mineralogy and leachate chemistry of the Boom clay – batch experiment at 60°C
M. Honty¹, M. Van Geet¹,², M. De Craen¹
¹ SCK-CEN, Belgium / ² ONDRAF-NIRAS, Belgium

P/AP/05 - Effects of grouting and shotcreting on the backfill geochemistry of a KBS-3 HLNW repository
D. Arcos¹, M. Luna, L. Duro
Enbros Spain, S.L., Spain

P/AP/06 - Evaluation of geochemical scenarios for iron/argillite interactions in a deep waste disposal: a densitvity study on reaction rates and gas partial pressures
L. Trotignon¹, T. Hairapetian, O. Bildstein, M. Jullien
CEA France

P/AP/07 - Smectite interaction with metal iron
M. Osacký¹, V. Suchá¹, J. Madejová², L’ Puškelová², P. Komadel², M. Miglerini³, A. Majerník², P. Uhlík¹
¹ Comenius Univ., Slovakia / ² Slovak Academy of Sciences, Slovakia / ³ Slovak Univ. of Technology, Slovakia

P/AP/08 - Insights into long-term alteration of bentonite-cement system based on coupled mass-transport/chemical reaction analysis
T. Yamaguchi¹, F. Yamada, K. Negishi, S. Hoshino, M. Mukai, T. Tanaka, S. Nakayama
JAEA, Japan

P/AP/09 - Effects of alkaline alteration on water diffusivity in montmorillonite gels – A NMR study
T. Takahashi¹, T. Ohkubo², Y. Ikeda¹
¹ Tokyo Inst. of Technology, Japan / ² JAEA, Japan

P/AP/10 - Investigation of smectite alteration and form of iron corrosion products in compacted bentonite being in contact with carbon steel for ten years
T. Ishidera¹, K. Ueno¹, S. Kurosawa², T. Suyama²
¹ JAEA, Japan / ² Inspection Development Corporation, Japan

P/AP/11 - TEM characterization of the FEBEX bentonite after two-years contact with iron corrosion products
E. Torres¹, M.J. Turrho¹, P.L. Martín¹, A. Escribano¹, J.L. Balandeño²
¹ CIEMAT, Spain / ² Univ. Complutense de Madrid, Spain

P/AP/12 - Concrete/FEBEX bentonite interaction: preliminary results on short-term column experiments
M.J. Turrho, A. Escribano, E. Torres, P.L. Martín
CIEMAT, Spain

P/AP/13 - IPHAP: background information on Philippine bentonites, hyperalkaline waters and potential analogue sites
C.A. Arcilla¹, E. Paguigan¹, C. Ferrer¹, W.R. Alexander², J.G. McKinley³
¹ Univ. of the Philippines, Philippines / ² Bedrock Geosciences, Switzerland / ³ McKinley Consulting, Switzerland
P/AP/14 - Simulation of the degradation of a concrete/clay interface: influence of temperature, unsaturated conditions and porosity variations
A. Burnol\textsuperscript{1}, F. Dupros\textsuperscript{1}, N. Spycher\textsuperscript{2}, T. Xu\textsuperscript{2}, P. Blanc\textsuperscript{1}, E.C. Gaucher\textsuperscript{1}
\textsuperscript{1}BRGM, France / \textsuperscript{2}Lawrence Berkeley National Laboratory, USA

P/AP/15 - Integrated study of 6 years in-situ steels/argillite interactions at Tournemire by mineralogical and modelling approaches
A. Gaudin\textsuperscript{1}, S. Gaboreau\textsuperscript{2}, E. Tinseau\textsuperscript{3}, D. Bartier\textsuperscript{4}, S. Petit\textsuperscript{2}, D. Beaufort\textsuperscript{2}
\textsuperscript{1}Univ. Nantes, France / \textsuperscript{2}Hyd'A2A, France / \textsuperscript{3}IRSN, France / \textsuperscript{4}Muséum National d'Histoire Naturelle, France

P/AP/16 - Study of nuclear glass / canister corrosion products / clay system by means of integral modular material tests
Y. Minet\textsuperscript{1}, J.E. Lartigue\textsuperscript{1}, K. Lemmens\textsuperscript{2}
\textsuperscript{1}CEA France / \textsuperscript{2}SCK.CEN, Belgium

P/AP/17 - Influence of dissolution/precipitation kinetics on the porosity clogging effect during cement/clay interactions
N. Marty\textsuperscript{1}, C. Tournassat\textsuperscript{1}, E.C. Gaucher\textsuperscript{1}, A. Burnol\textsuperscript{1}, E. Giffaut\textsuperscript{2}
\textsuperscript{1}BRGM, France / \textsuperscript{2}Andro, France

P/AP/18 - Alcaline perturbation into the Tournemire argillite: Structural and mineralogical studies of a 15 years in-situ propagation
E. Tinseau\textsuperscript{1}, J. Cabrera\textsuperscript{1}, D. Bartier\textsuperscript{2}, I. Techer\textsuperscript{3}, S. Lemius\textsuperscript{1}
\textsuperscript{1}IRSN, France / \textsuperscript{2}Muséum National d'Histoire Naturelle, France / \textsuperscript{3}GIS/CEREGE, Univ. d'Aix-Marseille, France

P/AP/19 - Geochemical behavior of clay material under neutral and alkaline conditions at low temperature
B. Madi\textsuperscript{1}, L. Michaux\textsuperscript{2}
\textsuperscript{1}École des Mines de Paris, France / \textsuperscript{2}CEA, France

P/AP/20 - A migration technique applied to study alteration of compacted sand-bentonite mixture in contact with concrete
T. Sugiyma\textsuperscript{1}, Y. Tsuji\textsuperscript{2}
\textsuperscript{1}Hokkaido Univ., Graduate School of Engineering, Japan / \textsuperscript{2}Gunma Univ., Japan

P/AP/21 - Hydrothermal alteration of Callovo-Oxfordian argillite from the Paris basin by neutral and alkaline solutions at 150°C and 300°C and in the presence of iron metal
R. Mosser–Ruck, L. Richard, M. Cathelineau
G2R, Univ. Nancy, CNRS, France

P/AP/22 - Some thermodynamic considerations on the behavior of Kerogen under conditions of alkaline perturbation
L. Richard
G2R, Univ. Nancy, CNRS, France

SESSION: GEOCHEMISTRY & MINERALOGY (GM)

P/GM/01 - Influence of natural sorbents immobilization of spent ion exchange resins in cement
I. Plecas, S. Dimovic
Vinca Inst. of Nuclear Sciences, Serbia

P/GM/02 - Chemical stability of rare-earth silicate
M.M. Orta, M.D. Alba, R. Alvero, A.I. Becerro, M.A. Castro, P. Chain, A. Escudero, M. Naranjo, E. Pavon, J.M. Trillo
Univ. Sevilla, Spain

P/GM/03 - Mineralogical heterogeneity of Rokle bentonite and radionuclide adsorption: A case study for cesium
J. Vejsada, A. Vokál
Nuclear Research Inst., Czech Republic

P/GM/04 - Rheological and sorption properties of clay-polymer composites
H.P. Zadvernıyuk, Y.G. Fedorenko, B.P. Zlobenko, T.I. Koromyslichenko
National Academy of Science of Ukraine, Ukraine

P/GM/05 - Clay mineral interactions with leachate solutions in landfills
S. Battaglia, M. Cervelli
Italian National Research Council, Italy

P/GM/06 - Lithium isotope fractionation during adsorption onto mineral surfaces
R. Millet, J.P. Girard
BRGM, France

P/GM/07 - Sorption of Sr$^{2+}$ onto mixed smectite / illite clays
Tiziana Missana, Miguel García–Gutiérrez, Úrsula Alonso
CIEMAT, Departamento de Medioambiente, Spain

P/GM/08 - Eh and pH in the porewater of compacted bentonite
A. Muurinen, T. Carlsson
VTT Technical Research Centre of Finland, Finland
P/GM/09 - Chemical interaction of $^{152}$Eu with the clay barrier
P. Chami, M.D. Alba, A.I. Becerro, M.A. Castro, A. Escudero, T. González-Carrascosa, S. Hurtado, E. Pavón, M. Villa
Univ. Sevilla, Spain

P/GM/10 - Modeling the acid-base surface chemistry of Montmorillonite
I.C. Bourg$^{1,2,3,4}$, G. Sposito$^{2,4}$, A.C.M. Bourg$^{3}$
$^{1}$ Andra, France / $^{2}$ Univ. of California, USA / $^{3}$ Univ. Pau et Pays de l’Adour, France / $^{4}$ Lawrence Berkeley National Laboratory, USA

P/GM/11 - A time resolved laser fluorescence and X-ray absorption spectroscopy of lanthanide/actinide sorption on clay minerals: influence of carbonate complexation
M. Marques Fernandes$^{1}$, Th. Rabung$^{2}$, R. Dähn$^{1}$, B. Baeyens$^{2}$, M. H. Bradbury$^{1}$
$^{1}$ Paul Scherrer Institut, Switzerland / $^{2}$ FKZ-INE, Germany

P/GM/12 - Structure elucidation and occurrence of Tc(IV) pyrogallol complexes
E. Breynaert, A. Maes
Katholieke Univ. Leuven, Belgium

P/GM/13 - Geochemistry of Se(0) under boom clay conditions
C. Bruggeman, A. Maes, J. Vancluyssen
Katholieke Univ. Leuven, Belgium

P/GM/14 - Experimental and modelling study of pure secondary silicate minerals reactivity in geological CO$_2$ sequestration conditions
A. Credoz$^{1}$, O. Bildstein$^{1}$, M. Mijljen$^{1}$, L. Raynal$^{1}$, J.-C. Pétrobin$^{1}$, L. Trottignon$^{1}$, O. Pokrovsky$^{2}$
$^{1}$ CEA, France / $^{2}$ LMTG, UPS, IRD, Observatoire Midi-Pyrénées, France

P/GM/15 - Experimental evaluation of a retention model for major groundwater elements on the Tournemire argillite
P. Jacquier$^{1}$, C. Beaucarie$^{1}$, A.L. Vuillaume$^{2}$, Ch. Wittbrood$^{2}$, J. Ly$^{1}$, J. Page$^{1}$, S. Savoye$^{2}$, H. Pitsch$^{2}$
$^{1}$ CEA, France / $^{2}$ IRSN, France

P/GM/16 - Modelling the long term interaction of cementitious pore water with Boom clay
D. Jacques, L. Wang
SCK·CEN, Boeretang 200, Belgium

P/GM/17 - Sorption-desorption of radionuclides and analogues in clays suitable for barriers
E. Galunin$^{1}$, P. Chain$^{2}$, M.D. Alba$^{2}$, M. Vidal$^{1}$
$^{1}$ Univ. Barcelona, Spain / $^{2}$ Univ. Sevilla, Spain

P/GM/18 - Modelling of the Redox evolution in the tunnel backfill of a high level nuclear waste repository
P. Grandje, C. Dominlech, D. Arcos, L. Duro, J. Bruno
Enviros Spain, S.L., Spain

P/GM/19 - Reactivity of nitrates in the different storage compartments of type-b wastes
L. André$^{1}$, H. Pauwels$^{1}$, M. Azaroual$^{1}$, A. Albrecht$^{2}$, M.-A. Romero$^{2}$
$^{1}$ BRGM, France / $^{2}$ Andra, France

P/GM/20 - Investigation into the biodiversity of sulphate reducing bacteria in Boom clay
S. Aerts$^{1}$, P. Boven$^{1}$, M. Van Geet$^{1,2}$, P. De Boever$^{3}$
$^{1}$ SCK·CEN, Belgium / $^{2}$ ONDRAF/NIRAS, Belgium / $^{3}$ Environmental Toxicology, Belgium

P/GM/21 - Colloid generation mechanisms from compacted bentonite under different geochemical conditions
U. Alonso, N. Albarran, T. Missana, M. Garcia-Gutiérrez
CIEMAT, Spain

P/GM/22 - Experimental reduction of aqueous sulphate by hydrogen in the context of the Callovo-Oxfordian argillite
L. Truche$^{1}$, G. Berger$^{1}$, D. Guillaume$^{1}$, E. Jacquot$^{2}$
$^{1}$ Univ. de Toulouse, CNRS, IRD, OMP, France / $^{2}$ Andra, France

P/GM/23 - Cation exchanged Fe(II) and Sr as compared to other divalent cations (Ca, Mg) in the Callovo-Oxfordian formation. Implications for porewater composition modeling
C. Tournassat$^{1}$, C. Lerouge$^{1}$, J. Brendlé$^{2}$, J.-M. Greneche$^{3}$, S. Touzelet$^{1}$, P. Blanc$^{3}$, E.C. Gaucher$^{1}$
$^{1}$ BRGM, France / $^{2}$ LMPC, France / $^{3}$ LPEC, France

P/GM/24 - Monte Carlo sensitivity analysis of modelled Opalinus clay porewaters from the Mont Terri rock laboratory
T. Thoenen
Waste Management Laboratory, Paul Scherer Institut, Switzerland

P/GM/25 - Microstructural investigation of Opalinus clay – proposal of a carbonate distribution model
M. Klinkenberg$^{1,2}$, S. Kaufhold$^{1}$, R. Dohrmann$^{1}$, S. Siegesmund$^{2}$
$^{1}$ BGR, Germany / $^{2}$ Geowissenschaftliches Zentrum der Universität Göttingen, Germany
P/GM/26 - Influence of natural organic matter on the sorption behaviour of Eu on illite (as model component for Boom clay)
D. J. Liu, C. Bruggeman, N. Maes
SCK-CEN, Belgium

P/GM/27 - Fate of boron and dynamics of reactive transport processes in the near field of a HLW disposal
T. Weber, L. Trotignon, C. Pozo, O. Bildstein, G. de Combarieu, P. Frugier, D. Menut
CEA, France

P/GM/28 - Sulfate-reducing bacteria (Desulfovibrio desulfuricans) activity monitored by magnetic measurements in Bure claystones (France) and Mont Terri claystones (Switzerland)
C. Aubourg1, D. Janots2, J.-P. Pozzi2
1 CNRS & Univ. Cergy Pontoise, France / 2 CEA & ENS Paris, France

P/GM/29 - Influence of EDTA and isosaccharinate organic ligands on the uptake and migration of europium in the Callovo-Oxfordian argillite
J. Klein, J. Pointeau
CEA, France

P/GM/30 - Experimental determination of thermodynamic properties of a chloride
H. Gailhanou1, J. Rogez1, J.C. van Miltenburg3, A. van Genderen3, J.M. Grenêche4, E.C. Gaucher1, C. Crouzet1, S. Touzelet1, P. Blanc1
1 BRGM, France / 2 Univ. Paul Cézanne, France / 3 Utrecht Univ., The Netherlands / 4 Univ. du Maine, France

P/GM/31 - Structural incorporation of trivalent f elements into the trictahedral clay mineral hectorite
N. Finck1, K. Dardenne1, M. L. Schlegel2, D. Bosbach1
1 FZK-INE, Germany / 2 CEA, France

P/GM/32 - Heavy metals migration in argilaceous rocks: on the use of laser-induced breakdown spectroscopy microprobe (Libs microprobe) as a microanalysis tool
D. Menut, J.L. Lacour, L. Salmon
CEA, France

P/GM/33 - Isotopic anomalies observed at the vicinity of fractures in porewater of Tournemire shales: experimental artefacts or local palaeocirculations?
S. Savoye1, J.L. Michelot2, M.V. Altinier1,2, S. Lemius1
1 IRSN, France / 2 Univ. Paris-Sud, France

P/GM/34 - Effect of temperature on the retention capacity of compacted bentonite: an experimental and numerical investigation
A. Jacinto1, R. Gómez-Espina2, M.V. Villar2, A. Ledesma1
1 Tech. Univ. of Catalunya, Spain / 2 Ciemat, Spain

P/GM/35 - Retention of Cs in Boom Clay: comparison of data from batch sorption tests and diffusion experiments on clay cores
N. Maes1, S. Salah1, D. Jacques1, M. Aertsens1, M. Van Gompel1, P. De Cannière1, N. Velitchkova2
1 CEA, France / 2 Bulgarian Academy of Science, Bulgaria

P/GM/36 - Sorption and engineering characteristics of some clay/shale deposits from Nigeria as landfill liner
M.N. Tijani, O.P. Bolaji
Dept. of Geology, Univ. of Ibadan, Nigeria

P/GM/37 - Influence of organic matter composition on iodine sorption: from fresh to thermally matured peat
S. Maillan1,2, P. Faure1, E. Leclerc2
1 G2R, Univ. Nancy, France / 2 Andra, France

P/GM/38 - Observation of microstructure of compacted Bentonite by X-ray micro CT method optimized with computer simulation
H. Takamatsu, N. Noda, T. Kozaki, M. Kitai, S. Tomioka, S. Sato
Hokkaido Univ., Japan

P/GM/39 - Hydration and hydrolysis of Sm3+ and Eu3+ in clay interlayer: neutron diffraction study
O. Sobolev1, L. Charlet1, G. J. Cuello2, A. Gehin1, J. Brendle3
1 Univ. Grenoble I, CNRS, France / 2 Institut L. Langevin, France / 3 LMPC, France

P/GM/40 - Molecular simulations of Na+ and Ca2+ Montmorillonite
M. Hedström, M. Birgersson, O. Karlund
Clay Technology AB, Sweden

P/GM/41 - Effect of temperature on the proton charge of Montmorillonite
M. Duc, F. Thomas, F. Gaboriaud
Univ. Nancy, CNRS, France

P/GM/42 - Transformation of organic matter in the presence of smectite: fate of lanthanides during polymerization reactions
T. Schäfer1, P. Michel1, F. Claret2, G. Buckau1, M. Elie3
1 FZK-INE, Germany / 2 CEA, France / 3 CREGU, France
P/GM/43 - Surface complexation modelling using multi-components approach. Sorption of selenium on argilite
N. Marmier, C. Hurel
Univ. Nice Sophia Antipolis, France

P/GM/44 - In-situ characterization of the Callovian-
Oxfordian porewater composition
A. Vinsot¹, S. Mettler²
¹Andra, France / ²Nagra, Switzerland

P/GM/45 - Natural organic matter fractionation
on mineral surfaces: a spectroscopic approach
F. Claret¹, T. Schäfer³, P. Reiller¹
¹CEA, France / ²BRGM, France / ³FZK-INE, Germany

P/GM/46 - Examination of clay minerals-organic
matter interactions at submicron-scale during
confined pyrolysis of a simplified system Volclay-
te type II kerogen
P. Michel¹, Th. Schäfer¹, F. Claret², M. Elie³
¹FZK-INE, Germany / ²CEA, France / ³Univ. Nancy, CNRS, France

P/GM/47 - Sorption of Np(v), U(vi) and Cs onto
bentonite and clayey soils
M.N. Sabodina¹, ², St. N. Kalmykov², K.A. Artem’eva², E.V. Zakharova¹
¹Russian Academy of Science, Russia / ²Lomonosov Moscow State Univ.,
Russia

P/GM/48 - The PHREEQC / tracers coupling tool
within the ALLIANCES platform
A. Dimier¹, J. Gaonbalet², N. Letetterier²
¹Andra, France / ²CEA, France

P/GM/49 - Is pore water close to the surfaces
of a clay rock enriched in heavy water isotopes
as compared to free pore water?
Th. Gimmi¹, ², H.N. Weber¹
¹Univ. of Bern, Switzerland / ²Paul Scherrer Institut, Switzerland

P/GM/50 - Ageing effect on the chemical
and isotopic (Sr and Ar) characteristics of cored
Mont Terri Opalinus Clays
J. Techer¹, N. Clauer², N. Liewig³
¹CEREGE, France / ²CNRS, Univ. L. Pasteur Strasbourg, France / ³Inst. Pléiade. H. Cuney, CNRS, France

P/GM/51 - Effect of concentration of the couples
of Cation (Cu²⁺, Pb²⁺) on the natural selectivity
phenomena in the case of Na-Montmorillonite:
qualitative XRD analysis
W. Oueslati¹, M. S. Karmous¹, H. Ben Rhaïem¹, B. Lanson², A. Ben Haj Amara¹
¹Faculté des Sciences de Bizerte, Tunisia / ²Univ. J. Fourier Grenoble, France

P/GM/52 - Qualitative study of synthetic Na-
Hectorite saturated by heavy metals cations
M.S. Karmous¹, W. Oueslati¹, M. Meftah¹, H. Ben Rhaïem¹, J. L. Robert², A. Ben Haj Amara¹
¹Faculté des Sciences Bizerte, Tunisia / ²IMPMC, France

SESSION: INVESTIGATION ON GEOLOGICAL ENVIRONMENTS (IGE)

P/IGE/01 - (S, O, Sr) isotopic constraints on the
diagenetic evolution of the Callovian-Oxfordian
formation at the Meuse/Haute-Marne URL
C. Lerouge¹, D. Widory¹, C. Guerrot¹, E.C. Gaucher¹, S. Buschaert²
¹BRGM, France / ²Andra, France

P/IGE/02 - Scale effect and heterogeneity
of hydraulic conductivity of sedimentary rocks
at Horonobe URL site
H. Urikami¹, R. Takeuchi¹, S. Yabuuchi²
¹JAEA Japan / ²Ministry of Economy, Trade and Industry, Japan

P/IGE/03 - Investigation and modeling of 3D
distribution of water chemistries in Horonobe,
Hokkaido, Japan
T. Kunimaru¹, H. Yamamoto²
¹JAEA, Japan / ²Technology Center, Tosei Corporation, Japan

P/IGE/04 - PH4: a 250 m deep borehole in
Tounemire for assessing the contribution of
transport phenomena to assumed overpressures
in the Toarcian/Domerian semipermene
J.M. Matray¹, J. Gonçalves², S. Savoye¹, I. Girardin², J. Cabrera¹, P. Lecathelinais¹
¹IRSN, France / ²Univ. Pierre et Marie Curie, France

P/IGE/05 - Lateral variability of mineralogy
and pore water chemistry of the Boom Clay
M. De Craen¹, M. Honty³, I. Wernaere¹, M. Van Geet¹, ², SCK-CEN, Belgium / ²ONDRAF-NIRAS, Belgium

P/IGE/06 - ³⁶Cl in groundwaters of Oxfordian and
Dogger limestones of the Eastern Paris basin:
implications for old groundwater dating
C. Le Gal La Salle¹, L. Benedetti³, J. Lancelot¹, D. Bourlès², B. Hamelin²
¹GIS, Univ. de Nîmes, France / ²CEREGE, Univ. Aix-Marseille 3, France
P/IGE/07 - Statistical preprocessing and analyses of hydrogeo-meteorologic time series in the PP experiment of Mont Terri (method. & first results)
H. Fatmi1, R. Ababou1, J.M. Matray2
1 Institut de Mécanique des Fluides de Toulouse, France / 2 IRSN, France

P/IGE/08 - Hydraulic conductivity of the Boom Clay in north-east Belgium based on four core-drilled boreholes
J. Wemaere, J. Marivoet, S. Labat
SCK-CEN, Belgium

P/IGE/09 - A new approach of laboratory permeability measurement of very tight rocks: experimental data of BCF, Mecsek Mts, SW Hungary
F. Fedor, Z. Máthé, G. Hámos, G. Somodi
MECEKÉRCE, Hungary

SESSION: MASS TRANSFER & POROUS MEDIA (MTPM)

P/MTPM/01 - Interlayer / micropore exchange of water and ions in clays: a molecular dynamics study
B. Rotenberg1, V. Marry1, N. Minkova2, R. Vuilleumier1, E. Giffaut3, P. Turq1
1 Univ. Paris 6, France / 2 CEA, France / 3 Andra, France

P/MTPM/02 - Multi-scale characterisation of mineral and textural spatial heterogeneities in Callovo-Oxfordian argillite and its consequence on solute species diffusion modelling
J.-C. Robinet1, N. Diaz2, P. Sardini1, F. Goutelard2, D. Menut2, J.-C. Parneix3, S. Sammartino4, D. Prêt1, D. Coelho5
1 HydraSA, France / 2 CEA, France / 3 ERM, France / 4 UMR INRA CSE, France / 5 Andra, France

P/MTPM/03 - Diffusion of ions in unsaturated clayrocks: Theory and application to the Callovo-Oxfordian argillite
D. Jougnot1,2, A. Revil1,3
1 CNRS-CEREGE, France / 2 Andra, France / 3 Colorado School of Mines, USA

P/MTPM/04 - Porous media characterization with respect to gas transfer in Callovo Oxfordian argillite
P. Boulin1, R. Angulo-Jaramillo2, J.F. Daian3, J. Talandier4, P. Berne1
1 CEA, France / 2 ENTP-E, France / 3 LETHE, France / 4 Andra, France

P/MTPM/05 - Predictions on a 2-D cementation experiment in porous medium: intercomparison on the comde project
B. Cochevin1, L. Trotignon1, O. Bildstein1, C. Steefel2, V. Lagneau3, J. van der Lee3
1 CEA, France / 2 Lawrence Berkeley National Laboratory, USA / 3 Ecole des mines de Paris, France

P/MTPM/06 - Large-scale gas injection (LASGIT) at the Åspö hard rock laboratory in Sweden
D.J. Birchall1, J.F. Harrington1, D.J. Noy1, P. Sellin2
1 British Geological Survey, UK / 2 SKB, Sweden

P/MTPM/07 - Simulating the geochemical coupling between vitrified waste, canister and near-field on the alliances platform
O. Bildstein, E. Piault, L. Trotignon, P. Montarnal, E. Deville
CEA, France

P/MTPM/08 - Toward radionuclide transport calculations on whole radioactive waste disposal with CAST3M platform
A. Genty, C. Le Potier
CEA, France

P/MTPM/09 - Experimental study of the water permeability of a partially saturated argillite
C. Imbert1, P. Semete2, P. Desgree2, B. Février2, A. Courtois2, G. Touzé1
1 CEA, France / 2 EDF, France

P/MTPM/10 - Mixed hexahedral finite elements for Darcy flow calculation in clay porous media
A. Sbou1, J.E. Roberts2, J. Jaffré3
1 Andra, France / 2, 3 INRIA, France

P/MTPM/11 - Diffusive properties of stainless steel filter discs before and after use in diffusion experiments with compacted clays
M.A. Glas, R. Rossé, L.R. Van Loon
Laboratory for Waste Management, Paul Scherrer Institut, Switzerland

P/MTPM/12 - Structural organization of porosity in the Opalinus clay at the Mont Terri Rock Laboratory under saturated and unsaturated conditions
J.M. Matray1, J.C. Parneix2, E. Tineau1, D. Prêt3, J.C. Mayor4
1 IRSN, France / 2 ERM, France / 3 HYDRASA, France / 4 ENRESA, Spain

P/MTPM/13 - Evaluation of pore structure in compacted saturated Bentonite using NMR relaxometry
T. Ohkubo1, H. Kikuchi1, M. Yamaguchi2
1 IAEA, Japan / 2 Inst. of Research and Innovation, Japan

P/MTPM/14 - Diffusion coefficients measurement in consolidated clays: a combination of micro-scale profiling and solid pore structure analyses
U. Alonso1, T. Missana1, M. Garcia-Gutiérrez1, A. Patelli2, M. Siitari-Kauppi3, A. Leskeninen1, V. Rigato4
1 CIEMAT, Spain / 2 CNEN, Italy / 3 Univ. of Helsinki, Finland / 4 LNL-INFN, Italy
P/MTPM/15 - Numerical interpretation of in-situ DIR diffusion experiments on the Callovo-Oxfordian clay at the Meuse/Haute-Marne URL
J. Samper¹, S. Dewonck², L. Zheng¹, Q. Yang¹, A. Naves¹
¹ Univ. La Coruña, Spain / ² Andra, France

P/MTPM/16 - Identification of relative conductivity models for water flow and solute transport in unsaturated compacted Bentonite
Z. Dai¹, J. Samper², A. Wolfsberg¹, D. Levitt¹
¹ Los Alamos National Laboratory, USA / ² Univ. La Coruña, Spain

P/MTPM/17 - Diffusion experiments in Callovo-Oxfordian clay from the Meuse/Haute-Marne URL, France: experimental setup and data analyses
M. García-Gutiérrez¹, J.L. Cortenzen², T. Missana¹, M. Mirgarro¹, U. Alonso¹, J. Samper³, Q. Yang³
¹ CIEMAT, Spain / ² Empresarios Agrupados, Spain / ³ UDC-ETSECCP, Spain

P/MTPM/18 - Transport in organo-montmorillonites: in-situ diffusion experiments using ATR-FIR spectroscopy
B. Schampera, S. Dultz, B. Riebe
Leibniz Univ. Hannover, Germany

P/MTPM/19 - Unsaturated flow around high-level long-lived radioactive waste repository drift seal with Alliances platform
A. Genty¹, D. Perraud²
¹ CEA, France / ² Andra, France

P/MTPM/20 - Numerical Interpretation of gas transport experiments on water-saturated samples of Opalinus clay
A. Poller¹, G. Mayer³, J. Croisé¹, P. Marschall², B. Krooss³, J.M. Matray¹, T. Tanaka³, P. Vogel³
¹ Colenco Power Engineering AG, Switzerland / ² Nagra, Switzerland / ³ Aachen Univ., Germany / ⁴ IRSN, France / ⁵ Obayashi Corporation, Japan / ⁶ BGR, Germany

P/MTPM/21 - Callovo-Oxfordian Formation at the Meuse/Haute-Marne URL: consistency between measured hydraulic conductivity and the drainage effect of the experimental drifts
J. Croisé³, J. M. Lavanchy¹, C.P. Emselle¹, M. Cruchaudet²
¹ Colenco Power Engineering AG, Switzerland / ² Andra, France

P/MTPM/22 - In-situ diffusion tests performed in the Callovo-Oxfordian mudstone in the Meuse/Haute-Marne URL: Experimental data and numerical interpretations
S. Dewonck¹, M. Descostes², V. Blin², J. Radwan², C. Poinsot²
¹ Andra, France / ² CEA, France

P/MTPM/23 - Influence of humic colloids on the migration of U(VI) in compacted clay
J. Mibus¹, ², S. Sachs¹
¹ Inst. of Radiochemistry, Germany / ² Paul Scherrer Institut, Switzerland

P/MTPM/24 - Diffusion of tritiated water and ions through the Tournemire argillite (France) in presence of alkaline fluids
J. Devol-Brown¹, S. Motellier², E. Tinseau¹, D. Thoby²
¹ IRSN, France / ² CEA, France

P/MTPM/25 - Reactive transport modelling of in-situ cement/clay interactions on Tournemire argillite
P. Marsal¹, L. De Windt², E. Tinseau³, D. Pellegrini¹
¹ IRSN, France / ² Ecole des Mines de Paris, France / ³ IRSN, France

P/MTPM/26 - Results on Pu diffusion experiments in the Opalinus Clay
A. Bauer, B. Fiehn, Ch. Marquardt, J. Römer, A. Görtzen, B. Kienzler
FZK-INE, Germany

P/MTPM/27 - Diffusion of H₂O and electro-osmosis in water-saturated compacted Na-montmorillonite using H₂¹⁸O as a tracer
S. Tanaka¹, T. Higashihara², N. Noda¹, S. Sato¹, T. Kozaki¹, H. Sato³, K. Hatanaka³
¹ Hokkaido Univ., Japan / ² Central Research Inst. of Electric Power Industry, Japan / ³ JAERI, Japan

P/MTPM/28 - Deterministic and probabilistic compact-mental modelling of nitrate reduction and transfer in a bituminous waste cell and the adjacent host rock
A. Albrecht¹, MA. Romero¹, M. Azaroual², H. Pauwels², L. André²
¹ Andra, France / ² BRGM, France

P/MTPM/29 - Experimental study on gas permeability of the Callovo-Oxfordian argillite of Meuse/Haute-Marne URL
J. Billiotte¹, D. Yang¹, K. Su²
¹ Univ. Marne-la-Vallée, France / ² Andra, France

P/MTPM/30 - Gas intrusion in saturated bentonite – a thermodynamic approach
M. Birgersson, M. Åkesson, H. Hökmark
Clay Technology AB, Ideon Research Centre Lund, Sweden

P/MTPM/31 - Evaluating the application of Archie’s law for argillaceous rocks
P. Blum¹, M. Scheunemann¹, L. Van Loon², D. Coelho³, N. Maes⁴, P. Grathwohl¹
¹ Univ. of Tübingen, Germany / ² Paul Scherrer Institut, Switzerland / ³ Andra, France / ⁴ SECK-CEN, Belgium
P/MTPM/32 - Comparison between radial diffusion and leaching for determining chloride and sulphate in Tournemire argillite pore water
Ch. Wittebrood1,2, S. Savoye1, P. Jacquier3, C. Beaucaire3, F. Bensencou1,4, H. Pitsch3, P. Gouze4, J.-L. Michelot4
1 IRSN, France / 2 Univ. Montpellier 2, CNRS, France / 3 CEA, France / 4 Univ. Paris-Sud, France

P/MTPM/33 - A cross method of a nanoscale model and macroscopic data to estimate anion effective diffusion coefficient in argillite
N. Diaz1, F. Goutelard1, P. Turq2
1 CEA, France / 2 Univ. Paris 6, France

P/MTPM/34 - Numerical modelling of coupled mechanics and gas transfer
P. Gerard1, R. Charlier1, J.-D. Barnichon2, J.-F. Shao3, G. Duveaux3, D. Hoeha4, C. Chavant5, F. Collin1
1 Univ. Liège, Belgium / 2 ANDRA, France / 3 Univ. Lille, France / 4 INPL, France / 5 EDF, France

P/MTPM/35 - Vertical distribution of HCO3- transport parameters in Boom clay in the Mol-1 borehole (Mol, Belgium)
M. Aertsens1, M. Van Gompel1, P. De Cannière1, N. Maes1, A. Dierckx2
1 SKC-CEN, Belgium / 2 ONDRAF-NIRAS, Belgium

P/MTPM/36 - Diffusion experiments in Callovian-Oxfordian clay from the Meuse/Haute-Marne URL France: 2 model results
J. Samper1, Q. Yang1, M. García-Gutiérrez2, T. Missana2, M. Mingarro2, U. Alonso2, J.L. Cormenzana3
1 UDC-ETSECP, Spain / 2 CIEMAT, Spain / 3 Empresarios Agrupados, Spain

P/MTPM/37 - An experimental protocol for the investigation of diffusion of ions through argillaceous barriers
M.A.M. Kedzirek, A.C.M. Bourg
Univ. Pau et Pays de l’Adour, France

P/MTPM/38 - Gaz permeability of an argilite: measurements and parameters identification
L. Malinsky, H. Gharbi, P. Valli
Ecole Polytechnique, France

P/MTPM/39 - CORE2D V4: A general purpose code for groundwater flow, heat and solute transport, chemical reactions and biological processes in porous and fractured media
C. Yang2, J. Samper1
1 Univ. La Coruña, Spain / 2 Indiana Univ. Bloomington, USA

P/MTPM/40 - Hyperfiltration of metal solutions through low-permeability media and its effects on hydraulic conductivity
G. Houben, F. Wagner
BGR, Germany

P/MTPM/41 - Argillites thermal conductivity variations induced by sedimentary/diagenetic processes and by mechanical decomposition
Y. Géraud1, L. Esteban1,2,3, J.L. Bouchez2, A. Trouiller3
1 Univ. L. Pasteur, IDR FORPRO, France / 2 Univ. Toulouse, IDR FORPRO / 3 ANDRA, France

P/MTPM/42 - Porosity network geometry and inferred permeability of the Callovian-Oxfordian argillites from magnetic fabric and oriented mercury injections
Y. Géraud1, L. Esteban1,2,3, J.-L. Bouchez2, A. Trouiller3
1 Univ. L. Pasteur, IDR FORPRO, France / 2 Univ. Toulouse, IDR FORPRO / 3 ANDRA, France

P/MTPM/43 - Identification and quantification of large-scale diffusion in a deep claystone formation (Opalinus Clay of Mont Russel, Switzerland)
M. Koroleva1, M. Mazurek1, A.M. Fernández2, A. Gautschi3, H.N. Weber1
1 Univ. of Bern, Switzerland / 2 CIEMAT, Spain / 3 Nagra, Switzerland

P/MTPM/44 - Reactive diffusion front driven by an alkaline plume in compacted Mg-homoionic bentonite
J. Cueva, R. Fernández, L. Sánchez, R. Vigil de la Villa, M. Rodríguez, S. Leguey.
Univ. Autónoma de Madrid, Spain

P/MTPM/45 - Transport number of sodium ions in water-saturated, compacted Na-Montmorillonite
T. Higashihara, K. Kinoshita, Y. Akagi, S. Sato, T. Kozaki
Hokkaido Univ., Japan

P/MTPM/46 - Swelling, transport and gas threshold pressure of a sealing bentonite plug: effect of sand addition
F. Skoczylas1, C.A. Davy1, P. Lebon2, J.-D. Barnichon2
1 Ecole Centrale de Lille, France / 2 ANDRA, France

P/MTPM/47 - Species-specific transport and reactive transport modelling of a long-term core infiltration experiment on Opalinus clay
U. Mäder1, Th. Gimmi1,2
1 Univ. of Bern, Switzerland / 2 Laboratory for Waste Management, Switzerland

P/MTPM/48 - Modelling gas injection tests in deformable clay buffers
S. Olivella, E.E. Alonso, D. Arnedo
Univ. Politécnica de Catalunya, Spain
SESSION: EXCAVATION DAMAGED ZONE

P/EDZ/01 - Influence of bedding planes to EDZ-evolution and the coupled HM properties of Opalinus Clay
T. Popp, K. Salzer, W. Minkley
Institut für Gebirgsmechanik GmbH, Germany

P/EDZ/02 - Electrical tomography monitoring of the EDZ during the excavation of the gallery 04 in the Mont Terri rock laboratory
D. Gibert, P. Nicollin, B. Kergosien, P. Bossart, C. Nussbaum
1GIR FORPRO; Géosciences Rennes, France; 2Federal Office for Topography, Switzerland; 3Institut Géotechnique SA, Switzerland

P/EDZ/03 - Seismic endoscopy and tomography of the EDZ of the gallery 04 in the Mont Terri rock laboratory
F. Nicollin, D. Gibert, B. Kergosien, C. Nussbaum, P. Bossart
1GIR FORPRO; Géosciences Rennes, France; 2Federal Office for Topography, Switzerland

P/EDZ/04 - A elastoplastic damage model for saturated and unsaturated stiffness clays: description and application to the modelling of EDZ around drifts in Callovo-Oxfordian argillites
J.C. Robinet, M.T Nguyen, J.D Barnichon, F. Plas
ECC Euro-Geomat-Consulting, France; 2Andro, France

P/EDZ/05 - Noninvasive monitoring of water content and microcracks in argillites using spectral induced polarization
A. Ghorbani, P. Cosenza, A. Revil, D. Jougnot, M. Schmutz, N. Florsh
1CNRS, Univ. P.M. Cune, France; 2CNRS, CEREGE, Univ. Aux-Marseille France

P/EDZ/06 - EDZ investigations by ultrasonic borehole logging in drifts of different ages excavated in argillaceous formations of the Tournemire experimental station (Aveyron, France)
J. Contrucci, J. Cabrera, E. Klein, K. Ben-Slimane
1INERIS & Ecole des Mines de Nancy, France; 2IRSN, France

P/EDZ/07 - Excavation damaged zones in the argillaceous Tournemire site: characterisation and failure mechanisms
A. Reib, K. Ben Slimane, J.M. Cabrera, J.M. Matray, S. Savoye
IRSN, France

SESSION: H, HM, AND THM-C PROCESSES IN ENGINEERED BARRIERS (THME)

P/EDZ/08 - Hardening based degradation factor: influence of mean stress and stiffness
S. Maiolino, LMS, Ecole Polytechnique, France
1LMS, Ecole Polytechnique, France; 2CETE, LRPC Lyon, Meca Roches, ERA, France

P/EDZ/09 - Disturbance in the EDZ in the Opalinus clay at Mont Terri
S. Yong, S. Loew, C. Fidelibus, F. Lamy, E. Frank
1Engineering Geology, Zurich, Switzerland; 2Swiss Federal Nuclear Safety Inspectorate, Switzerland

P/EDZ/10 - Experimental study on self-sealing capacity of clay rocks
Chun-Liang Zhang, Tilmann Rothfuchs
GRS, Germany

P/THME/01 - Determining water permeability of a compacted bentonite sand mixture under confined and free-swell conditions
Y.J. Cui, A.M. Tang, C. Loiseau, P. Delage
Ecole Nationale des Ponts et Chaussées, France

P/THME/02 - Model prediction of engineered barrier system effectivity in the fracture at laboratory scale
M. Polak et al., 1.2, 4
1ISATEch s.r.o., Czech Rep.; 2SG – Geotechnika a.s., Czech Rep.; 3ProGeo s.r.o. Czech Rep.; 4AV _R Czech Rep.

P/THME/03 - Changes in the hydraulic properties of a smectite in presence of chromium
H. Soulé, J.M. Fleureau
Ecole Centrale Paris, France

P/THME/04 - Wall friction and ejection behaviour of bentonite-base buffer material
P.L. Wu, Y. M. Tien
1Atomic Energy Council, TAIWAN; 2National Central Univ., Taiwan

P/THME/05 - Thermo-hydro-mechanical behaviour of a large scale mock-up test “Ophelie” in Belgium - laboratory characterization and numerical modelling
E. Romero, X. Li Xiang
1Univ. Politécnica de Catalunya, Spain; 2EIG, EURIDICE, Belgium
P/THME/06 - Modeling swelling characteristics and permeability of several compacted bentonite affected by saline water
Y. Tanaka, T. Hasegawa, K. Nakamura
Central Research Inst. of Electric Power Industry, Japan

P/THME/07 - Modelling for the long-term Mechanical and Hydraulic behaviour of bentonite-based materials considering chemical transitions
F. Sahara1, T. Murakami1, I. Kobayashi1, M. Mihara2, T. Ohi2
1 KAJIMA Corporation, Japan / 2 JAERI - Japan Atomic Energy Agency, Japan

P/THME/08 - Coupled thermal–hydro analysis on partially saturated bentonite
J.-D. Lu1, W.-H. Huang2, W.-Y. Lee2, I.-H. Sui2
1 Inst. of Nuclear Energy Research, Longtan, Taiwan / 2 National Central Univ., Taiwan

P/THME/09 - Behaviour of a bentonite barrier in the laboratory: experimental results up to 8 years and numerical simulation
M.V. Villar1, M. Sánchez2, A. Gens3
1 CIEMAT, Spain / 2 Univ. of Strathclyde, UK / 3 Univ. Politécnica de Catalunya, Spain

P/THME/10 - Coupled hydrogeochemical calculations of the interactions of corrosion products and bentonite
J. Samper, C. Lu, L. Montenegro
Univ. La Coruña, Spain

P/THME/11 - Freezing in saturated bentonite – A thermodynamic approach
M. Birgersson, O. Karlund, U. Nilsson
Clay Technology AB, Sweden

P/THME/12 - Mechancial modeling of MX-80 - Development of constitutive laws
M. Åkesson, O. Kristensson
Clay Technology AB, Sweden

P/THME/13 - Mechancial modeling of MX-80 - Quick tools for BBM parameter analysis
M. Åkesson, O. Kristensson
Clay Technology AB, Sweden

P/THME/14 - TBT_3 Mock-up test-experimental and model results
M. Åkesson1, C. Gatain2
1 Clay Technology AB, Sweden / 2 CEA, France

P/THME/15 - Suction characteristics of two compacted bentonite
S.R. Yang, W.H. Huang, T.H. Hsiao
National Taiwan Univ. of Science and Technology, Taiwan

P/THME/16 - Retention curves and volume change properties of unsaturated mx-80 bentonite – a laboratory study
A. Dueck, U. Nilsson
Clay Technology AB, Sweden

P/THME/17 - Humidity induced swelling and water absorption rate of highly compacted bentonite
A. Dueck, M. Lönnqvist, R. Goudarzi, L. Böresson
Clay Technology AB, Sweden

P/THME/18 - Unconfined compression tests on bentonite samples exposed to high temperature during long time in the field test lot
A. Dueck, O. Karnland, U. Nilsson
Clay Technology AB, Sweden

P/THME/19 - Thermophysical properties of bentonite
M. Plötze1, U. Schärli2, A. Koch3, H. Weber4
1 Inst. for Geotechnical Engineering, Switzerland / 2 Ing.-büro Schärli, Switzerland / 3 RWTH Aachen, Germany / 4 Negro, Switzerland

P/THME/20 - Geochemistry and mineralogy of a bentonite subjected to heating and hydration in an in-situ test after five years operation
A.M. Fernández, P. Rivas, A.M. Melón, M.V. Villar
CIEMAT, Spain

P/THME/21 - LOT project. Long term test of buffer material at Aspö: a Mössbauer spectroscopic study
Embaie Ferrow
Lund Univ., Sweden

P/THME/22 - Self-sealing properties of buffer material under saline condition
S. Suzuki1, M. Sazashari1, T. Takegahara2, H. Takao2
1 Nuclear Chemistry and Chemical Engineering Center, Japan / 2 JGC Corporation, Japan

P/THME/23 - A study on extrusion behaviour of buffer material into fractures using X-ray Ct method
K. Tanai, K. Matsumoto
Japan Atomic Energy Agency, Japan

P/THME/24 - ESDRED Project, module 1 - Selection and THM characterisation of the Buffer Material
C. Gatain, G. Touzé, C. Imbert, W. Guillot, P. Billaud
CEA, France
P/THMN/01 - Three Dimensional analyses of combined gas, heat and nuclide transport in a repository considering coupled thermo-hydrogeomechanical processes
V. Javeri
grs, Germany

P/THMN/02 - Experimental study on the thermo-hydro-mechanical behaviour of boom clay
T.T. Le 1, Y.-J. Cui 1, P. Delage 1, X.-L. Li 2
1 ENPC/CERMES, France / 2 ESV EURIDICE GIE, Belgium

P/THMN/03 - Hydraulic in-situ measurements in the opalinus clay in the frame of a heater test performed at the Mont Terri URL
K. Wieczorek, N. Jockwer
grs, Germany

P/THMN/04 - Hydro-mechanical behaviour of natural boom clay in controlled-suction tests
E. Romero 1, A. Lima 1, A. Gens 1, X.-L. Li 2
1 Univ. Politécnica de Catalunya, Spain / 2 EIG, EURIDICE, Belgium

P/THMN/05 - A constitutive approach to address the thermal and hydric impacts in the concept of deep radioactive waste repositories
B. Francois 1, M. Nuth 1, L. Laloui 1
1 Ecole Polytechnique Fédérale de Lausanne, Switzerland

P/THMN/06 - Numerical analysis on stability of boom clay tunnel by shield construction
W. Chen 1, S. Jia 1, H. Yu 1, G. Wu 1, X. Li 2, F. Bernier 2
1 Chinese Academy of Sciences, China / 2 SCK-CEN, Belgium

P/THMN/07 - A thermo-hydro-mechanical model for clay in unsaturated conditions
W. Chen, X. Tan, G. Wu, S. Jia
Chinese Academy of Sciences, China

P/THMN/08 - 3D modelling of TER experiment accounting for fully anisotropic thermo-poroelastic behaviour
R. Giot 1, D. Hoxha 1, A. Giraud 1, F. Homand 1, K. Su 2, C. Chavant 3
1 Univ. Nancy, France / 2 Andra, France / 3 EDF R&D, France

P/THMN/09 - Hydromechanical modeling of shaft excavation in Meuse/Haute-Marne laboratory
G. Duveau 1, Y. Jia 1, K. Su 2, J. F. Shao 1
1 Laboratoire of Mechanics of Lille, CNRS, France / 2 Andra, France

P/THMN/10 - Modelling of drying damage in engineered and natural clay barriers for nuclear waste disposal
H. Peron 1, L. Laloui 1, T. Hueckel 2, L.B. Hu 2
1 Swiss Federal Inst. of Technology Lausanne, Switzerland / 2 Duke Univ., USA

P/THMN/11 - Elastoviscoplastic behaviour of Meuse/Haute-Marne argillite: laboratory tests and modelling
D. Hoxha 1, C. Auvray 1, A. Giraud 1, F. Homand 1, K. Su 2
1 Univ. Nancy, France / 2 Andra, France

P/THMN/12 - Long-term behaviour of a lime treated soil under percolation conditions
B. Leguiller 1, O. Cuisinier 1, V. Ferber 1, Y.J. Cui 2, D. Deneele 1
1 Laboratoire Central des Ponts et Chaussées, France / 2 École Nationale des Ponts et Chaussées, France

P/THMN/13 - Stress redistribution and hydromechanical effects due to excavation and drilling operations in TER experiment
L. Uhlig 1, M. Jobmann 1, M. Polster 1, J. Vaunat 2, B. Garitte 2, Y. Wileveau 2
1 DBE TECHNOLOGY GmbH, Germany / 2 Univ. Politecnica de Catalunya, Spain / 3 Andra, France

P/THMN/14 - Thermodynamic model on swelling of bentonite buffer and backfill materials
H. Sato
JAEA, Japan

P/THMN/15 - 3D analysis of a heating test in the Opalinus clay
A. Gens 1, B. Garitte 1, J. Vaunat 1, Y. Wileveau 2
1 Technical Univ. of Catalonia, Spain / 2 Andra, France

P/THMN/16 - THM analysis of a “mock-up” laboratory experiment using a double-structure expansive model
A. Jacinto 1, M. Sánchez 2, A. Ledesma 1
1 Tech. Univ. of Catalonia, Spain / 2 Univ. of Strathclyde, U.K.

P/THMN/17 - Measurement of the effect of reconfinement on rock properties around a slot
J. Morel 1, C. Balland 2, G. Armand 1
1 Andra, France / 2 INERIS, Ecole des mines de Nancy, France

P/THMN/18 - Laboratory Study of desaturation - resaturation effects on a claystone
D. Nguyen Minh, F. Vales, Q.T. Pham, H. Gharbi
Ecole Polytechnique, France.
P/THMN/19 - Deformation induced by dissolution of salts in porous media
N. Mokni1, S. Olivella1, X. Li2, S. Smets3, E. Valcke3
1 Univ. Politécnico de Catalunya, Spain / 2 EIC EURIDICE, Belgium / 3 SCK·CEN, Belgium

P/THMN/20 - Bentonite swelling pressure in pure water and saline solutions
O. Kornland
Clay Technology AB, Sweden

P/THMN/21 - Mineralogy and sealing properties of various bentonites and smectite-rich clay materials
O. Kornland1,2, U. Nilsson1, S. Olsson3, P. Sellin4
1 Clay Technology AB, Sweden / 2 Lund Univ., Sweden / 3 Geochemica, Sweden / 4 SKB, Sweden

P/THMN/22 - Evaluation of the geochemical processes occurred in the opalinus clay formation subjected to a ventilation test
A.M. Fernández1, A.M. Melón1, M.V. Villar1, M.J. Turrero1, B. Garitte2, L. do. N. Guimaraes3, A. Gens2, J. C. Mayor4
1 CIEMAT, Spain / 2 Univ. Politécnico de Catalunya, Spain / 3 Univ. Federal de Pernambuco, Brazil / 4 ENRESA, Spain

P/THMN/23 - Soil structure considerations in description of compacted and natural clay behaviour
A. Koliu, L. Laloui, L. Vulliet
Ecole polytechnique fédérale de Lausanne, Switzerland

P/THMN/24 - The hydro-mechanical behaviour of Tunisian clayey soil used as discharge site of acidic waste
N. Hamdi1, A. Marzouki2, E. Srasra1
1 Unité matériaux, Technopole Boy Cédria, Tunisia / 2 Département génie civil, ISET Rades, Tunisia

P/THMN/25 - Consolidation and rebound properties of Opalinus clay: a long-term, fully-drained test
R.J. Cuss1, J.F. Harrington1, D.J. Noy1, D.J. Birchall1, P. Marschall2
1 British Geological Survey, UK / 2 Nagra, Switzerland

P/THMN/26 - Multidimensional modeling of a poro-elastic medium: identification of the behaviour of a clay formation from a stochastic representation of piezometric fluctuations
A. Mallet1, R. Ababou1, J.M. Matray2
1 Institut de Mécanique des Fluides de Toulouse, France / 2 IRSN, France

P/THMN/27 - Various approaches for the comprehension of the time-dependent behaviour of Callovo-Oxfordian argilite
Y. Renaud1, T. Maison1, Y. Wileveau2, G. Armand2
1 INERIS, France / 2 Andra, France

P/THMN/28 - A new approach of estimating the influence of drilling mud on the borehole pressure history
C. Enachescu, B. Frieg, S. Rohs, B. Paris
Gold Associates, Germany

P/THMN/29 - Thermo-chemical-hydro-mechanical modelling: contributions to the assessment of the long term behaviour of a nuclear waste disposal in a deep clay formation
J.C. Robinet1, T.D. Bui2, J.D Barnichon2, F. Plas2
1 EC&G Euro-Geomat-Consulting, France / 2 Andra, France

P/THMN/30 - Impact of thermal load on the far field and galleries of a repository
G. Klubertanz1, M. Folly1, P. Hufschmied1, E. Frank2
1 Ensh+Berger Bern AG, Switzerland / 2 Hauptabteilung für die Sicherheit der Kernanlagen, Switzerland
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|     |             |
Name | First Name  
|-----|-------------|
|     |             |

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- **Check**: □

- **Bank Transfer**: □

- **Payment Orders**: □

In __________________________ Date __________________________ Signature __________________________
