

# Call for papers



*Ecole Centrale de Lille* and *Laboratoire de Mécanique de Lille (LML)* both organise  
A French national symposium on the  
TRANSFER PROPERTIES OF GEOMATERIALS

## TRANSFERT 2012

March 20<sup>th</sup>, 21<sup>st</sup> and 22<sup>nd</sup>, 2012, at *Ecole Centrale de Lille, France*

### Main topics

Fluid transfer through natural and artificial geo-materials (such as concrete, argillite, clays, tight gas rocks) is a primary concern for the design and safety assessment of Civil Engineering structures. Permeability and diffusivity are two main properties to be determined when dealing with long term nuclear waste repository, ageing of nuclear power plant vessels, or fluid flow through porous tight rocks in the petroleum or environmental sectors.

Technical specifications for repository structures require that maximum permeability and diffusivity levels should be observed. In particular, if the repository structures should be stable on the long term, a proper knowledge of the variation of these properties with respect to time, chemical, mechanical, thermal or hydrous loading is essential. Therefore, the experimental assessment of permeability and diffusivity is expected under mechanical, thermal and/or chemical solicitations, and with time, for varied geo-materials. These properties are input to predictive transfer and poro-mechanical models. Experience shows that such assessment is generally delicate. Moreover, the presence of micro- and macro-cracks after repository tunnel excavation (in a so-called EDZ, Excavation Damaged Zone), or in ageing nuclear power plant vessels, significantly affects transfer properties through geo-materials. Depending on the flowing fluid nature (liquid and/or gas), cracks are susceptible to seal, or even to heal (i.e. to lose memory of former cracks).

This scientific symposium is organised by *Laboratoire Mécanique de Lille (LML, ER4)* with the objective to provide some answers to the issues to which engineers, industrialists, contractors and researchers are confronted, in the context of geo-material transfer properties, in the laboratory or *in situ*, under the influence of mechanical, thermal and/or chemical solicitations with time, and with associated predictive modelling approaches.

### Key dates:

- Abstract submission (2 pages, in French, or **in English for the FORGE Workshop**) before **30 September 2011** by email at: [transfert2012@ec-lille.fr](mailto:transfert2012@ec-lille.fr)
- Notification of acceptance : 30 October 2011
- Full paper submission before 31 December 2011
- Proceedings edited on CD-Rom and, after review, in a special issue of an international journal.

# Call for papers

## Scientific program:

Topic 1 : experimental assessment of permeability and diffusivity

Experiments at the laboratory scale or *in situ*; confrontation between laboratory or *in situ* measurements; effect of injected fluids; partially-saturated states (relative permeabilities); gas entry, gas threshold and gas breakthrough pressures.

Topic 2 : evolution of permeability and diffusivity, and couplings

Effect of mechanical loading and damage; effect of chemical degradations; thermal and drying effects; couplings; sealing and healing

Topic 3 : modelling approaches

Predictive models of fluid transfer, with coupling effects as described in Topic 2; correlation with associated properties (pore network morphology, etc.); micro-macro representations; pore network models.

## FORGE Workshop :

A special half-a-day session will be dedicated to a scientific workshop, which will tackle the issues related to the FORGE (Fate Of Repository Gases) European Project: see <http://www.bgs.ac.uk/forge/>

## Organizing committee:

Chairman: Frédéric Skoczylas, Ecole Centrale de Lille/LML-ER4

A. Khelidj, GeM, St Nazaire

N. Burlion, LML/ER4

JF Shao, LML/ER4

Technical organisation: C. Davy and F. Agostini, LML/ER4

## Scientific committee:

Chairman: Luc Dormieux

K. Aït-Mokthar, LEPTIAB

V. Baroghel-Bouny, LCPC

X. Bourbon, Andra

M. Carcasses, LMDC

P. Dangla, Institut Navier

L. Dormieux, ENPC

S. Granet, EDF

J.-M. Torrenti, IFSTTAR

L. Jeannin, GDF/Suez

A. Khelidj, GeM, St Nazaire

G. Pijaudier-Cabot, LFC-R

M. Prat, IMFT

R. Charlier, U. Leuven (Belgique)

A. Sellier, LMDC

J. Talandier, Andra

For the FORGE workshop:

Patrik Sellin, SKB/Sweden ; Jon F. Harrington, BGS/United Kingdom.

**Contact and information:** <http://transfert2012.ec-lille.fr>

[catherine.davy@ec-lille.fr](mailto:catherine.davy@ec-lille.fr)

[franck.agostini@ec-lille.fr](mailto:franck.agostini@ec-lille.fr)

**Sponsorship:** This event is supported by AUGC (French University Civil Engineering Association)

