

## Gastvortrag Prof. Cui

### Experience of ENPC in investigating the THM behaviour of bentonite-based materials

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The thermo-hydro-mechanical (THM) behaviour of bentonite-based materials has been investigated in CERMES research group of Laboratory Navier – ENPC since 1993 in collaboration with several agencies for nuclear waste management in the context of deep geological disposal of nuclear waste. Both, laboratory testing and constitutive modelling have been conducted. In terms of laboratory testing, different scales were considered, from the microscopic scale using techniques such as mercury intrusion porosimetry, scanning electron microscopy and micro-CT (Fig. 1) through the scale of specimen using high pressure oedometers and triaxial cells to the scale of physical model (Fig. 2). Emphasis was put on the effect of technological voids on the swelling property and the coupled effect of stress, suction and temperature on the hydraulic and mechanical behaviours. In terms of constitutive modelling, new models have been developed, accounting for most phenomena evidenced experimentally under complex THM loadings.

Prof. Dr.-Ing. habil. Cui is a director of Laboratory Navier, Paris. He graduated from Tongji University, China, in 1984 for Bachelor. After that he graduated for Master (DEA) of the mechanics applied to constructions in 1989 and for Doctor in 1993 in ENPC, Paris. He got habilitation in 2000. Prof. Cui is an expert in unsaturated soils, experiments and modelling. He published several articles in *Géotechnique*, *Canadian Geotechnical Journal*, *Engineering Geology*, *Geotechnical Testing Journal* and others. He is a member of the French Society of Soil Mechanics and Geotechnical Engineering, Technical Committee of CFMS, Academic Council of IFCIM, International Society for Soil Mechanics and Geotechnical Engineering.

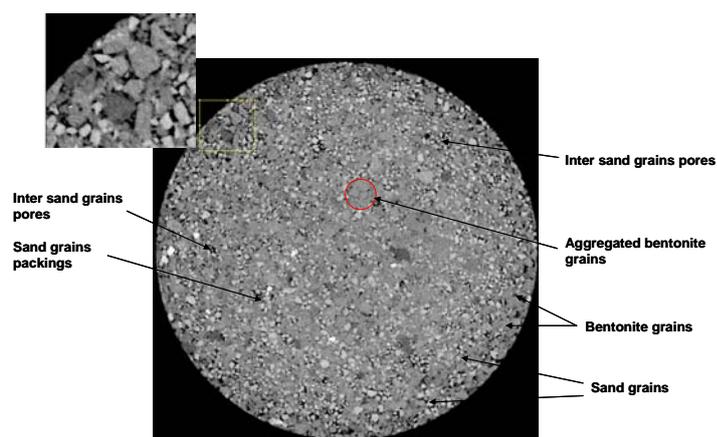


Figure 1. Image of micro-CT on a compacted sample of bentonite-sand mixture.

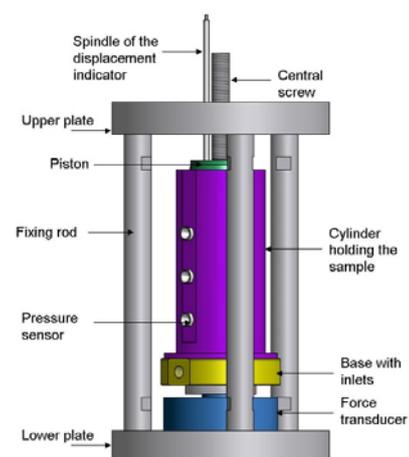


Figure 2. An infiltration cell with axial and radial swelling pressure measurements.

Donnerstag 16. Januar 2014, 16:00 Uhr - 17:30 Uhr  
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