

Coupled THMC Analysis in Energy and Environmental Geomechanics

Dr Marcelo Sanchez

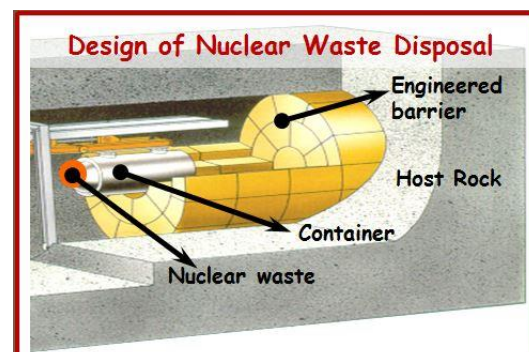
Professor in the Zachry Department of Civil Engineering TAMU

Seminar overview:

The involvement of geotechnical and geomechanical engineers in problems comprising unprecedented Thermo-Hydro-Mechanical and Chemical (THMC) conditions is every time more frequent, particularly in applications related to geo-environmental and geo-energy problems. The prediction of geo-engineering systems behavior under coupled THMC conditions represents huge challenges for our profession, but also extraordinary opportunities to gain a better understanding of soils and rocks behavior under such complex extremes. In this lecture, recent improvements in our understanding of geomaterials behavior subjected to simultaneous THMC perturbations will be presented, as well as the incorporation of the main features associated with the THMC behavior of soils and rocks in constitutive and numerical models. Some of the applications to be briefly discussed in this seminar include: behavior of swelling clays and pelletized mixtures typically used in the design of engineered barriers and seals; behavior of hydrate bearing sediments; fault reactivation triggered by gas injection; geo-thermal structures; design of underground compressed air storage system; and formation and propagation of desiccation cracks in soils.

Short biography:

Dr. Marcelo Sanchez was appointed as an Associated Professor in the Zachry Department of Civil Engineering TAMU in September 2009. He obtained his first degree in Civil Engineering from the Universidad Nacional de San Juan (Argentina). His Master and Ph.D. (2004) degrees are from the Universidad Politecnica de Catalunya (UPC, Barcelona, Spain). His expertise lies in the analysis of Thermo-Hydro-Mechanical and Chemical (THMC) coupled problems in geological media. He is also interested in unsaturated soils mechanics, in both experimental and numerical investigations. He is the Chairman of the ISSMGE Technical Committee TC308 on "Energy Geotechnics".



When and where:

Thursday, 10 September, 17:00
Oatley room, Engineering Department

Queries:

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Photos from the seminar

