

## **FLUID - POROUS MEDIUM INTERACTION IN QUASI-BRITTLE GEOMATERIALS**

**MATIAS ALONSO<sup>\*</sup>, JEAN VAUNAT<sup>\*</sup>  
AND SEBASTIÀ OLIVELLA<sup>\*</sup>**

<sup>\*</sup> Universitat Politècnica de Catalunya  
Campus Nord, Carrer de Jordi Girona, 1-3, 08034 Barcelona, Spain  
matias.alonso@upc.edu

### **ABSTRACT**

Fluid-porous medium interaction problems are present in several industrial fields, such as petroleum engineering, geological waste disposal, geologic carbon sequestration, geothermal energy extraction, among others. In quasi-brittle materials, such as hard soils and rocks, these problems could include fracture opening, strain and flow localization, healing or sealing phenomena, and other complex coupled multiphysics processes.

This session aims to explore recent advances and approaches in computational mechanics of multiphase porous media to meet the challenges posed by the complex processes involved in the fluid-porous medium interaction problem, as well as their application to practical problems in geological media

In particular, this session aims to include contributions related to the development, calibration and validation of advanced constitutive models including: 1) flow in dense granular media; 2) failure and post-failure conditions (strain localization, damage and fracture); 3) healing or sealing processes; 4) other thermo-chemo-hydro-mechanical coupling phenomena in which the fluid-porous medium interaction plays an important role.