



UNIVERSITÀ DEGLI STUDI
DI TRENTO

Dipartimento di Ingegneria Civile,
Ambientale e Meccanica



Mechanics of refractory
materials at high-temperature
for advanced industrial
technologies
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AVVISO DI SEMINARIO

Si comunica che **giovedì 31 marzo 2016 a partire dalle ore 15.30**
si terrà presso l'aula **B2** (via Mesiano 77) il seguente seminario

Enhanced Geothermal Reservoirs: Impedance and Efficiency of Thermal Recovery

Prof. B. Loret

Ecole Nationale Polytechnique de Grenoble

The natural permeability of geothermal reservoirs is low and needs to be enhanced to ensure an efficient use and economic viability. Hydraulic fracturing is the standard technique used for that purpose. Impedance and efficiency are key characteristics in regard to the economic viability of geothermal sites. The influence of hydraulic fracturing process on the efficiency of thermal recovery from Hot Dry Rock (HDR) reservoirs is addressed in a thermo-poroelastic framework. A fracturing model is integrated into a domestic Fortran 90 finite element code that solves transient thermo-poroelastic boundary value problems. The model governs the evolution of the cracks, namely their directions, lengths and apertures. While hydraulic fracturing improves significantly the permeability of the reservoir, and decreases its impedance, it also reduces its life time.

The model parameters are extracted from data on the pilot reservoir at Soultz-sous-Forêts or back-calculated from the stimulations and circulation tests that have been run in 1993, 1997 and 2002-2005. The temperature dependence of the viscosity of the working fluid is shown to affect fluid and heat transports in the poroelastic medium and hence to decrease the efficiency of hydraulic fracturing. Increasing the salt concentration of the brine has comparable effects.

Keywords: hydraulic fracturing, thermo-poroelastic framework, viscosity-temperature change, impedance and efficiency

Tutti gli interessati sono invitati a partecipare.

Il seminario è organizzato da F. Cecinato e A. Gajo