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**THM and reactive transport analysis of expansive clay barrier in radioactive waste isolation.**

(English) [Zbl 1106.82372](#)

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**Summary:** A fully coupled formulation combining reactive transport and an existing thermo-hydro-mechanical (THM) code is briefly described. Special attention has been given to phenomena likely to be encountered in clay barriers used as part of containment systems of nuclear waste. The types of processes considered in the chemical formulation include hydrolysis, complex formation, oxidation/reduction reactions, acid/base reactions, precipitation/dissolution of minerals and cation exchange. Both kinetically controlled and equilibrium-controlled reactions have been incorporated. The formulation has been implemented in the finite element code CODE\_BRIGHT. An application is presented concerning the performance of a large scale in situ heating test simulating high-level nuclear waste repository conditions.

**MSC:**

[82C70](#) Transport processes in time-dependent statistical mechanics

[76S05](#) Flows in porous media; filtration; seepage

[80A32](#) Chemically reacting flows

[82-08](#) Computational methods (statistical mechanics) (MSC2010)

Cited in **2** Documents

**Keywords:**

[reactive transport problem](#); [THM formulation](#); [clay barrier](#); [nuclear waste](#)

**Software:**

[CodeBright](#)

**Full Text:** [DOI Link](#)

**References:**

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