Contaminant migration experiments in an artificial block-scale granite fracture

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Migration of contaminants (radionuclides, heavy metals, nanoparticles) in crystalline rock environment is driven mainly by advective process in fractures. The main goal of our project is to develop tools for evaluation of migration and retention of potential contaminants in the rock environment as the key input values for the safety assessment of anthropogenic activities.

The physical model of granite block (dimensions: 80x50x40cm) was assembled and the generated artificial fracture was characterised by means of 3D laser scanner. Subsequently the block was instrumented with on-line measuring devices (conductivity, pressure), allowing performing of migration experiments.

Detailed description of the fracture parameters (Fig. 1) serves as a key input for modelling purposes using both conventional software (MODFLOW, FEFLOW) and in-house code (Flow123d).

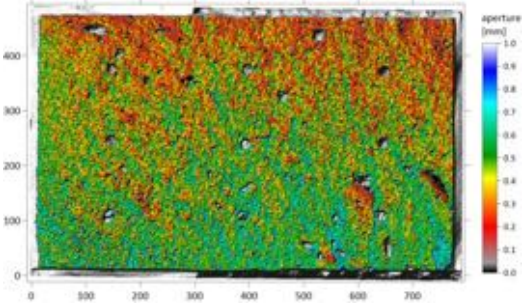

Fig. 1. Colored fracture aperture distribution

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