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Analysis of crack propagation and transport properties in rock samples using micro computer tomography

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The use of imaged based methods to determine properties of geological materials is becoming an alternative to laboratory experiments. Furthermore, the combination of laboratory experiments and image based methods using micro computer tomography have advanced the understanding of geophysical and geochemical processes. Within the scope of the "Shynergie" project, two special topics have been studied using such combination: a) the generation and propagation of cracks in rocks (specially wing cracks) and b) the time dependence of transport properties of rocks due to chemical weathering. In this publication, we describe the design considerations of our micro CT scanner to manipulate rock samples that have been subjected to the experiments to determine the above mentioned phenomena. Additionally, we discuss the preliminary experimental results and the initial interpretations we have gathered from the observations of the digitized rock samples.