

CHARACTERIZATION OF GEOLOGICAL RESERVOIRS FOR STORAGE OF CARBON DIOXIDE USING TRACER TESTS

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ABSTRACT

Geological storage of greenhouse gases represents one solution for the mitigation of climate change. Deep geological reservoirs are hardly accessible and, most commonly, only a limited number of boreholes are available. Therefore, the characterization of these reservoirs is a challenging task. One important tool for understanding the fluid transport parameters are the tracer tests. They are aimed at providing information about the fluid-rock interfaces and densities, the size of the reservoir, the heterogeneity distribution, at estimating the travel time, at determining leakages, the interfacial area between the fluids and the residual saturations.

This research presents the design of the tracer tests in the pre-injection of CO₂ stage. The fluid transport parameters are sensitive to the type of tracer test and therefore this should be carefully chosen in the designing process.

We perform a parametric study related to different tracer experiments, i.e. single- (Pruess, 2011) or inter-well (Ghergut et al., 2011), and to different heterogeneity distributions. The tracer tests are considered to be performed at Heletz site, Israel, within the MUSTANG project (www.co2mustang.eu).

Ghergut, I., Bensabat, J., Niemi, A., Licha, T., Nottebohm, M., Schaffer, M., Sauter, M., 2011. Single-well and inter-well tracer test design for CCS pilot site assessment.

Pruess, K., 2011. Thermal single-well injection-withdrawal tracer tests for determining fracture-matrix heat transfer area.