DEVELOPMENT OF NEW TRACERS FOR HIGH TEMPERATURE GEOTHERMAL FIELDS

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ABSTRACT

Institute for Energy Technology (IFE) at Kjeller has been working for more than 20 years in developing and testing new tracers for oil industry. These tracers are being used by oil companies in exploration and reservoir management technologies in interwell and single-well field studies. Prior to such studies, behavior and characterization of such tracers is conducted under static and dynamical laboratory conditions. The static experiments reveal thermal and chemical stability as well as partitioning properties of tracers amongst different phases (oil, gas, water), whereas dynamical flow experiments tell us about property of tracers with respect to adsorption on rocks and degree of anion exclusion (for anionic tracers) during the fluid flow. Understanding of these laboratory experiments is essential if we wish to interpret tracer production curves in large field studies.

Recently there has been an interest in developing geothermal fields which operate under high temperature water conditions (temperatures > 374 C and pressures circa 218 bars). This includes supercritical conditions. Therefore it would be useful to have a knowledge of the behavior of tracers used in geothermal field studies which are stable under such harsh conditions. Knowledge of this kind is today missing

This lecture describes logistic steps in characterizing new tracers suitable for geothermal investigations. This includes static and dynamical experiments, where a special attention is paid to thermal degradation, partitioning behavior and adsorption properties of such tracers.