

Geochemical system of underground CO₂ storage in deep saline aquifers; researches in Geological Survey of Japan, AIST

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As the climatic effect of global warming has become sensible, a need for immediate action for CO₂ emission reduction is widely recognized in these days. Geologic sequestration of CO₂ to a deep saline aquifer is considered to be the most feasible methods.

It is necessary to obtain public recognition and acceptance for underground CO₂ sequestration toward its implementation. A long-term stability of injected CO₂ fluid in the reservoirs needs to be indicated for this purpose. Geochemical interactions of CO₂ fluid with interstitial saline water and surrounding sedimentary rocks are important to understand the long-term stability in the underground reservoir. The essential factors are geochemical characteristics of reservoirs and processes of rock-fluid interactions to evaluate the stability of underground CO₂ reservoirs.

We have been studying rock(mineral)-water-CO₂ interactions in modeled CO₂ reservoir system to understand geochemical processes therein. Our studies include following sub-themes; 1) the natural analogue studies, such as the geochemistry and rock-water interaction in CO₂-bearing springs and diagenetic changes of sedimentary rocks, 2) geochemical study of deep groundwater in young sedimentary basins, 3) geochemical simulation and experiments in a chemical system of underground reservoirs. Current status of our research project will be presented in the session.