

A proposal of CO₂ underground storage using hydrate

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There is a fact that methane exists naturally and stably in the form of hydrate (solid).

As natural analog with methane hydrate, form CO₂ hydrate using gas hydrate mechanism based on temperature and pressure, propose that could also be applied to underground storage of CO₂. The concepts of the CO₂ hydrate storage are as follows.

(1) Injection liquid or supercritical CO₂ in the storage layer.

(2) Injected CO₂ moves above by a density difference, when temperature and pressure condition reached the domain that formed hydrate, make clogging in a pore (come to have seal function).

(3) CO₂ becomes able to storage under layer of CO₂ hydrate having seal function. (not need the cap rock as geological structure)

As a result of investigating the temperature in the surrounding sea area of Japan, we confirm that temperature and pressure condition to form CO₂ hydrate in the underground of sea bottom. It is thought that very likely to be the CO₂ hydrate storage.

Aquifer storage (including CO₂-EOR) to have the cap rock as a method of the CO₂ storage is popular. But if CO₂ hydrate storage is realized, we can hope that contribute to right lot expansion of the CO₂ storage.

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