

Experimental study on dissolution of basaltic glass;Application to the geological CO2 sequestration

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The geological sequestration of CO₂ is believed to be an immediately available and technologically feasible means of reducing CO₂ emissions into the atmosphere. The merit of CO₂ sequestration in the aquifer is that (1) we can continue to use fossil fuel in industry because waste gas from plants is collected and directly secured in the aquifer, (2) we can use the existing technology developed by oil and gas industry to collect the gas, (3) it would cost lower than the sequestration under sea.

For the geological CO₂ sequestration, their geology, hydrology and estimation of disposal capacity are examined. However, the studies of CO₂ behavior in underground have not been conducted and knowledge of CO₂ remains very ambiguous. In addition, geology, hydrology and estimation of disposal capacity would be different from region to region, the geological investigation of sequestration site should be discussed to satisfy the actual in Japan.

The present study reports the result of experiments on the dissolution of basaltic glass to determine the dissolution rate constant and the calculation results on the mineral trapping and solubility trapping using the rate constant obtained by the present experiment based on the dissolution kinetics geochemical code (Patharc).