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# Effect of Groundwater Chemical Composition on the Progress of $CO_2$ Geochemical Trapping

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Geochemical trapping has been believed to be very important for improving the long-term security of $CO_2$aquifer storage and many researchers try to elucidate the mechanism of geochemical trapping by experimental and simulation approaches. The progress of the $CO_2$geochemical trapping depends on types of aquifer host rocks and on temperature and pressure conditions of the aquifer. Furthermore, chemical composition of the aquifer water affects the progress of $CO_2$ geochemical trapping because the salinity of groundwater acts on dissolution of $CO_2$into groundwater. However, this effect is still uncertain.
We conduct a long-term geochemical simulation using GAMSPath, the geochemical modeling software by Geochemical Applications and Modeling Software Ltd (Talman et al. 2000), and evaluate the effect of the groundwater composition on the progress of $CO_2$geochemical trapping. In the present study, we assume basaltic rocks as host rocks of the $CO_2$storage aquifers because they contain high cation abundances of Mg and Ca that govern acid neutralization potential of the rock and formation of stable carbonate minerals. We focus on the long-term behavior of $CO_2$in the basaltic aquifers.

<Reference>
Talman SJ., Perkins EH., Gunter WD. (2000): Users Manual for GAMSPath: A Reaction Path-Mass Transfer Program DRAFT. pp.39, Geochemical Applications and Modeling Software Ltd.

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