

Is dawsonite, $\text{NaAl}(\text{CO}_3)(\text{OH})_2$, a mineralogical trump to fix CO_2 underground? - its changing roles in GCS

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An option storing CO_2 in a saline aquifer is recently considered to be vital for successful deployment of CO_2 sequestration in many countries including Japan. The injected CO_2 is expected to be, in a long period, fixed into newly formed carbonates through a variety of geochemical processes operative in the underground CO_2 reservoir initially filled with saline groundwater. Dawsonite, $\text{NaAl}(\text{CO}_3)(\text{OH})_2$, which is a carbonate composed only of elements concentrated in the upper crust, is one of the promising candidates of CO_2 -trapping minerals in the early phase of the geochemical study on geological CO_2 storage (GCS). Through the accumulation of studies, however, the possible role of dawsonite is gradually changing although it is still a geochemically important carbonate in GCS. In my presentation, the possible roles of dawsonite will be summarized and introduced: one of them is a carrier of Al released from aluminosilicates, and the other is a self-sealing mineral filling fractures formed by the invasion of CO_2 -rich fluid.

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