



Minerals Impact on CO₂ Geo-sequestration in Deep Reservoirs

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Message from the Guest Editors

CO₂ geo-sequestration is one potential method to dispose of excess CO₂ in the atmosphere. Deeply buried reservoirs such as saline aquifers, unmineable coal seams, tight shale reservoirs, and depleted oil reservoirs are often studied. When CO₂ is injected into these reservoirs, it interferes with the initial equilibrium, and chemical interactions occur between the injected CO₂ and reservoir rocks, specifically, the minerals in the reservoirs or in the nearby strata (caprock). The dissolution of CO₂ into strata brine generates an acidic environment, and the original carbonate minerals, such as quartz, biotite, etc. dissolve into the acid fluid. The concentration of chemical elements Ca, Mg, and K in the brine increases with the injection of CO₂. The enhancement of reservoir porosity due to the dissolution of the minerals is dependent on the geochemical properties of the reservoir rocks. Reservoir permeability is improved due to the increase in porosity. On the other hand, the precipitation of these minerals during transportation blocks the fluid migration channels and reduces permeability.





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Message from the Editor-in-Chief

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