

Effects of CO₂ exposure on the chemical surface properties of chalk: Implications for long-term containment risks

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The research presented in this poster examines the rate of calcite (CaCO₃) precipitation on chalk minerals under different surface treatment conditions. The experimental protocol developed for this study involved exposing reservoir and outcrop chalk samples to an organic solvent (dichloromethane, CH₂Cl₂), carbonated water, and supercritical CO₂, followed by calcite precipitation tests to determine reaction kinetics. The findings indicate that surface treatments significantly influence the CaCO₃ precipitation rate by modifying surface chemistry, specifically through the increased availability of nucleation sites on the chalk minerals. These results are potentially valuable for predicting CO₂ flow in carbon capture and storage (CCS) projects, improving the accuracy of monitoring techniques for detecting possible leakage, and optimizing storage efficiency.

