

Abstract Submitted  
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**Purple fingers: convection in carbon sequestration** ANJA SLIM, MAHESH BANDI, L. MAHADEVAN, Harvard University — In geological carbon sequestration, CO<sub>2</sub> injected into a saline formation is less dense than the resident brine and floats above it. It is slightly soluble in brine and progressively dissolves. Brine with dissolved CO<sub>2</sub> is slightly denser than “pure” brine giving the potential for convective overturning. We experimentally study the dissolution process from first contact between CO<sub>2</sub> and brine through onset of convection to almost complete saturation for Rayleigh numbers between 80 and 1200. We present an analogue experiment using potassium permanganate as our solute, which closely mimics relevant CO<sub>2</sub> properties. We describe the different dynamical regimes and connect these with trends in several global measures, including the dissolution flux. We find onset of convection using both amplitude and flux deviations from pure diffusion.

Anja Slim

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