

Abstract Submitted  
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**Mass Transport Measurement in 3D Porous Media for Carbon Sequestration** ROBERT ECKE, SCOTT BACKHAUS, Los Alamos National Laboratory, KONSTANTIN TURITSYN, MIT — To determine the storage potential for carbon sequestration strategies involving porous media, accurate determination of mass transport efficiency is required. We have made accurate measurements of mass transport in geometries similar to those relevant for sequestration, namely a gravitationally stable two layer system where the diffusion interface between the two phases is unstable. We use water and propylene glycol as the fluids in cells with cylindrical geometry. For a range of Rayleigh numbers between 150 and 5000, we find mass transport efficiency that is consistent with steady state thermal heat transport convection in porous media and with 2D mass transport in a Hele-Shaw geometry [1]. A transition from a high mass transport state to a lower mass transport state typically occurs between 4 and 6 convective times and is observed over the full Ra range.

[1] S. Backhaus, K. Turitsyn, and R.E. Ecke, Physical Review Letters **106**, 104501 (2011).

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