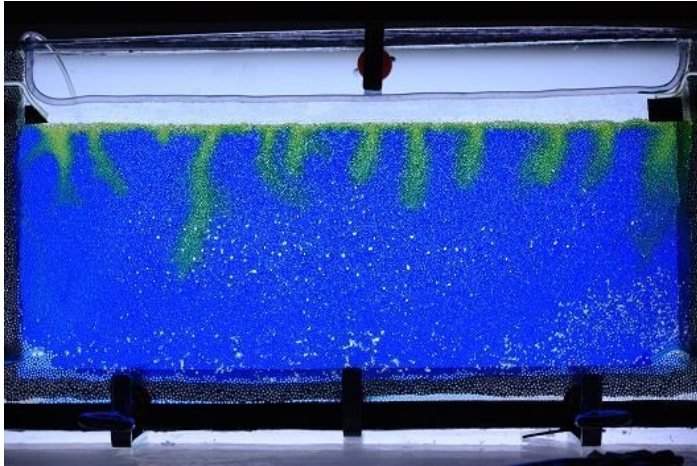


### Master project: CO<sub>2</sub> storage and stability of convection plumes in model aquifers

When CO<sub>2</sub> is injected into a closed water aquifer, which may be a porous medium closed by a caprock, the CO<sub>2</sub> will rise due to buoyancy to top of the reservoir where it will dissolve partially in water by diffusion and convection and form carbonic acid. The density of carbonic acid is higher than the density of pure water and this will cause the carbonic acid to sink due to buoyancy. This will set up an unstable convection pattern which will be stabilized by the viscosity of the fluids, the resistance of the porous medium, and the CO<sub>2</sub> diffusion constant. The main tasks of this project will be to perform systematic experiments in quasi 2D experimental models by changing buoyancy and the permeability of the porous medium. This problem is of central importance to mastering CO<sub>2</sub> Storage in aquifers.



*Figure: A layer of CO<sub>2</sub> above a water-saturated porous medium consisting of glass beads. An indicator acid has been added to the water carbonic acid to turn it blue. Where the CO<sub>2</sub> has been absorbed by the water, carbonic acid forms which turns the color to green. The acid has larger density than water and forms sinking plumes.*