## PORE SCALE DYNAMICS DURING TWO-PHASE FLOW IN POROUS MEDIA

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We study experimentally the interface dynamics between two immiscible fluid during drainage, as the nonwetting phase displaces the wetting phase in an initially fully saturated porous medium. The goal is to develop methods of fluid displacement monitoring in soils and porous media, as e.g. for problems of pollution remediation. The system is confined by a vertically oriented Hele-Shaw cell, with piezoelectric type acoustic sensors mounted along the centerline. During drainage potential surface energy is stored at the interface up to a given threshold in pressure, at which an instability occurs as new pores are invaded and the radius of curvature of the interface increases locally, the energy gets released, and part of this energy is detectable as acoustic emission. By detecting pore-scale events emanating from the interface at various points, we look to develop techniques for localizing the displacement front. To assess the quality, optical monitoring is done using a high speed camera.

In our study we also aim to gain further insight into the interface dynamics by varying parameters such as the effective gravity, the invasion speed and probing the system by means of active tomography.