

Abstract Submitted
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Imbibition kinetics of spherical aggregates PASCAL HBRAUD, IPCMS/CNRS, DIDIER LOOTENS, SIKKA, ALBAN DEBACKER, IPCMS/CNRS — The imbibition kinetics of a millimeter-sized aggregate of 300 nm diameter colloidal particles by a wetting pure solvent is studied. Three successive regimes are observed : in the first one, the imbibition proceeds by compressing the air inside the aggregate. Then, the solvent stops when the pressure of the compressed air is equal to the Laplace pressure at the meniscus of the wetting solvent in the porous aggregate. The interface is pinned and the aggregate slowly degases, up to a point where the pressure of the entrapped air stops decreasing and is controlled by the Laplace pressure of small bubbles. Depending on the curvature of the bubble, the system may then be in an unstable state. The imbibition then starts again, but with an inner pressure in equilibrium with these bubbles. This last stage leads to the complete infiltration of the aggregate.

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