Postdoctoral position:

Densification of boehmite suspensions : *in-situ* observation using DLS - SAXS coupling

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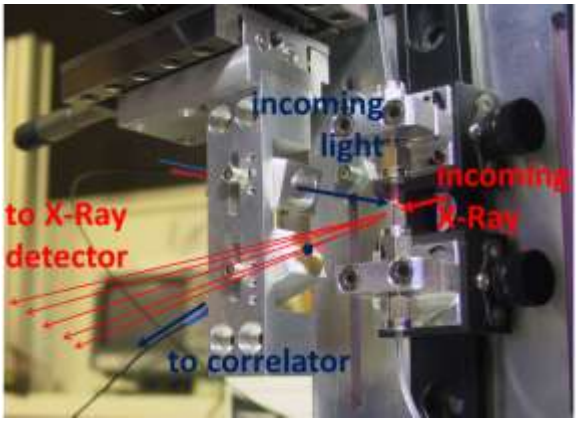
Postdocs are offered a 12 month full contract

Alumina, the ubiquitous catalyst support of refining industry, present a hierarchical multi-scale porosity in the nano to micrometer range. Alumina is obtained from boehmite paste calcination during which topotactic transformation occurs from boehmite to alumina nano-crystals. Hence the porous features of alumina are largely herited from structure of (aggregated) boehmite nano-crystals in acidic water.

The subject of the post-doctoral work is the study of the **densification of boehmite suspensions** with a peculiar emphasis on both the dynamics and structure evolution during the concentration of boehmite particles. Various diluted initial suspensions will be controlled by parameters such as aspect ratio of boehmite nano-crystals, pH, ionic strength and their aggregation state. Osmotic stress will be used to concentrate slowly these diluted suspensions.

Dynamics and structure of the suspensions will be monitored ***in-situ*** **by using a DLS-SAXS coupling** environment previously developed in IFPEN (Figure). The set-up, based on a quartz capillary, allows to measure simultaneously and from the same sample volume the SAXS signal and DLS autocorrelation function.

The postdoctoral researcher will have to develop an osmotic stress environment compatible with the DLS-SAXS capillary, prepare the various diluted boehmite suspensions, perform and interpret the DLS-SAXS experiments, carry out additional rheological measurements. Publication of the results in peer reviewed journal will be encouraged.



DLS-SAXS coupling environment

Candidates should be experimentalists. Previous experience in Colloids and Soft Matter area and in Scattering Techniques would be a plus.

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To apply, please send your CV and motivation letter (research interests, motivation, references) to: loic.barre@ifpen.fr .