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SANS technique: a complementary tool to study the stability of foams

Foams are multi-scale non-equilibrium systems so that it is still difficult to predict their foamabilities and metastabilities. In order to better understand the physico-chemical factors that affect the foams kinetics at different structural scale, it was necessary to develop coupled techniques that would provide structural information on the foam within a column and from nanometric up to macroscopic scale.

In this work, the first objective was to develop this new device which allows the simultaneous data collection from a small angle neutron scattering diffractometer, from an optical camera and from an electrical conductivity meter to measure the conductivity, all of them at a chosen height from the solution. The analysis of these mesoscopic and macroscopic data obtained simultaneously enable us to better understand the correlation between the mechanisms of drainage, ripening and coalescence involve at the different scales in the aging of the foam.

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