

INTERNSHIP PROPOSAL

Laboratory name: **Laboratoire de Physique des Solides**

CNRS identification code: **UMR 8502**

Internship director's surname: **SALONEN**

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Internship location : **Laboratoire de Physique des Solides, Bâtiment 510,
Université Paris Sud, 91405 Orsay**

Thesis possibility after internship: YES

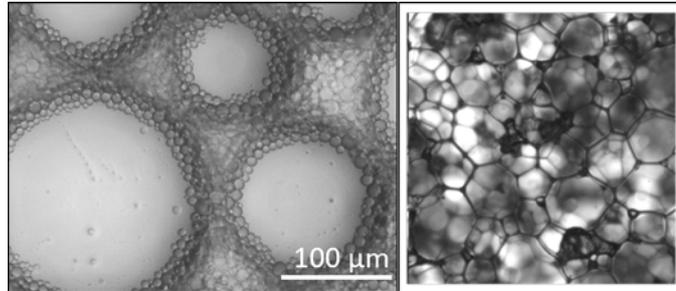
Funding: NO

If YES, which type of funding:

Controlling foam ageing in viscoelastic media

Foams are dispersions of gas bubbles in a continuous medium. They are widely used in industrial products largely due to their lightness and interesting mechanical properties.

However, they are unstable in time and destabilize through various mechanisms. One of these mechanisms is *coarsening*, which is driven by the Laplace pressure difference between small and large bubbles. This difference leads to a net gas flux, resulting in an increase of the average size of the bubbles in time. As the size increases,



the bubbles need to continuously rearrange to accommodate to the changing stress configuration, and this is where the mechanical properties of the continuous phase become important. The question we will address during this internship is *how do the mechanical properties of the continuous phase impact the coarsening of the foam*. The work is experimental in nature and consists of the preparation and study of foams made out of complex fluids (such as emulsions or colloidal gels, as shown in the photographs), by image analysis, light scattering and rheology. In addition, we will collaborate with theoreticians and numerical simulators to develop models for the description of foam coarsening in complex media.

We are looking for an enthusiastic candidate, willing to work as part of an international team, with a possibility to spend some time working in Fribourg, Switzerland. The person should be both willing to work in the laboratory making foams and studying them, and interested to interact and work with theoreticians.

Please, indicate which speciality(ies) seem(s) to be more adapted to the subject:

Condensed Matter Physics: YES

Macroscopic Physics and complexity: YES

Quantum Physics: NO

Theoretical Physics: NO