

Foam formation dynamics in depressurised complex fluids

Post-doctoral position: 12 months.

Start date: Autumn 2026. Position open until filled

Hosting laboratory:

Soft Matter Science and Engineering Laboratory - ESPCI PSL, Paris, France

<https://www.simm.espci.fr/-Accueil-.html>

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Aqueous foams, composed of gas bubbles dispersed in a liquid phase, are fascinating soft materials. They are inherently dynamic, evolving over time and eventually disappearing. This temporal behavior makes them both challenging and rewarding to study. While their limited stability can complicate controlled generation, it also offers opportunities to explore and tune their properties. This is especially true when the foaming fluid is a complex fluid, such as an emulsion, where interactions between bubbles and the continuous phase lead to a range of behaviours [1-3].

The presence of bubbles also makes materials with interesting physical and sensorial properties. This is why they are found in many applications. The project, part of an industrial collaboration, aims to understand foam formation with a siphon, similar to whipped cream dispensers used in the kitchen. Here the foam is produced from dissolved gas as it is depressurised. The postdoctoral researcher will participate in experimental design, carry out experiments on complex fluids, perform image analysis, and contribute to model development.

We are looking for a highly motivated experimentalist with a background in soft matter physics, chemical engineering or related fields.

[1] *Curr.Opinion Coll.Int. Sci.*, 50:101381 (2020). <https://doi.org/10.1016/j.cocis.2020.08.006>

[2] *Nature Communications* 14:1125 (2023). <https://doi.org/10.1038/s41467-023-36763-y>

[3] *Food Hydrocolloids* 173:112185 (2026) <https://doi.org/10.1016/j.foodhyd.2025.112185>