

## Master 2

### INTERNSHIP PROPOSAL

Laboratory name: F.A.S.T (Fluides, Automatique et Systèmes Thermiques), L'Oréal, LLB (CEA)

CNRS identification code: UMR 7608 (FAST)

Internship director's surname: L. Pauchard

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Internship location: Université Paris Saclay Orsay (FAST)

Thesis possibility after internship: YES/NO

Funding: YES/NO.

If YES, which type of funding: CIFRE grant

#### Properties of cosmetic deposits for mineral photoprotection

In the context of « L'Oréal for the Future » and the 2030 Sustainable Development Goals, understanding mineral formulations is crucial to reach the challenges of tomorrow's photoprotection. One of the challenges is to propose new approaches that address environmental issues. It is crucial to have a good knowledge of the physico-chemical control parameters that impact the coating, in order to be able to optimize the properties of solar products. The aim of this project is to investigate these control parameters at different scales (particles - aggregates - materials). This multi-scale study will be carried out in collaboration with the laboratory FAST (Université Paris Saclay) for the study of the spreading-wetting-control of aggregation and, with the LLB (CEA Saclay) for a study by radiation diffusion to quantify these aggregation states at different scales. The objective is to link these characteristics with the filtering properties of the studied systems. The internship will be mainly experimental and based on the use of different techniques at the nanometer scale (X-ray diffraction...) up to the macroscopic scale (use of rheometer, microscopy, image processing). The domains of expertise are: colloids, inorganic nanoparticles, imaging, radiation diffraction, complex systems, soft matter, dispersions, particle science, interfaces.

