



## PhD offer in Fluid Mechanics

### Wetting and Evaporation of Sessile Drops

#### *Detailed Analysis of the Contact Line Using Advanced Optical Techniques*

Location: LFCR – Anglet, France

Collaboration: TIPs ULB – Brussels, Belgium

Duration: 3 years

Start: Sept/Oct. 2025

Gross salary: ~2200€/month

#### **Job description**

This thesis aims to deepen the understanding of wetting and evaporation phenomena through a detailed analysis of the contact line. These phenomena, which are ubiquitous in nature and industry, depend on the dynamics of the contact line, which is still only partially understood and predicted. The present thesis proposes to develop an original experimental approach based on the simultaneous coupling of several optical techniques. The goal is to characterize in situ, with high precision and high spatial and temporal resolution, the entire morphology of a sessile wetting drop, from the precursor film to the apex, as well as the hydrodynamics within these regions. Different contact line dynamics will then be explored in controlled experiments (including spreading, evaporation, sliding) under various surface physico-chemical properties and atmospheric conditions. These investigations will allow for revisiting some classic experiments and exploring new, more original ones. The results will be analyzed in comparison with advanced mathematical models. Predominantly experimental and interdisciplinary (hydrodynamics, transfer, physical chemistry, soft matter, and optics), this thesis is part of the  $\mu$ MEGA research project, co-financed by the Carnot Institute ISIFoR and the Pau Béarn Pyrénées Urban Community. It will be carried out in collaboration with the TIPs laboratory at ULB, with the possibility of research stays.

**Keywords:** Hydrodynamics, Transfer, Drops/Films, Surfaces & Interfaces, Wetting, Evaporation, Contact Line, Optical Methods.

#### **Profile and skills**

- Engineering/Master student with a major in physics, mechanics, physical-chemistry, or optics.
- Knowledge or experience appreciated in fluid mechanics, transport phenomena, interfacial phenomena, and/or signal and image processing
- Motivated by experimental work
- Attracted by a multidisciplinary environment and technological innovation
- Good communication skills to share information and results within different teams

## **Application**

To apply, candidates must submit the following documents:

- A concise cover letter (maximum one A4 page) summarizing the provided documents and the nature of the information transmitted for selection.
- A complete CV.
- A motivation letter (maximum two A4 pages).
- Transcripts from the academic background.
- Preferably, two recommendation letters, or at a minimum, the contact information for two references.

The documents should be sent by email to the contact below before **01/05/2025**, with the subject line "μMEGA PhD position UPPA" to ensure proper handling.

## **Supervisors and contact**

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