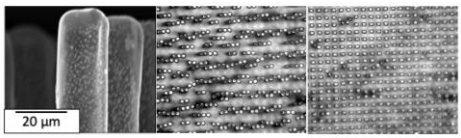
Post-doctoral position in soft matter physics

Wetting dynamics of complex superhydrophobic surfaces

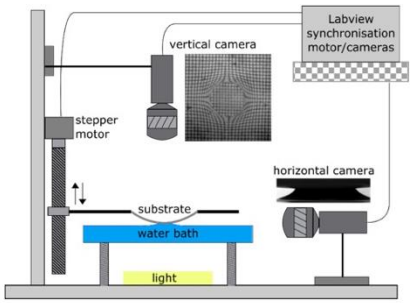
Institut de Physique de Nice (INΦNI) : Team MIMIC (Xavier Noblin, Céline Cohen)

Summary:

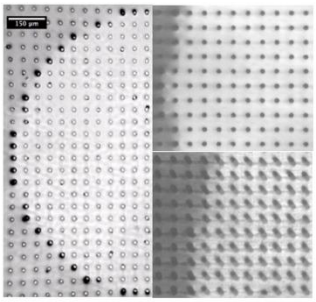
Textured superhydrophobic surfaces have been the center of intensive research in the last 25 years, in particular, in the static regime. The dynamics of the contact line on those surfaces remains poorly explored and no theoretical model have been proposed yet to explain the apparent advancing and receding contact angles dependencies with contact line speed. To better understand those behaviors, systematic experiments as function of geometrical parameters and of liquid used are needed. Magnetically activated, deformable surfaces will also be explored.



Left: magnetic pillars surface. Right: Capillary bridge setup. [1] Cohen, C., Bouret, Y., Izmaylov, Y., Sauder, G., Forestier, E., & Noblin, X., Soft Mater. 2019.



Capillary bridge experiment



Evaporation experiment

As part of the ANR MADNESS project, we propose to fabricate well controlled, model textured surfaces to vary slippage and adhesion, then to identify their role on the contact angles dependency with contact line speed. Surfaces will be made of soft elastomeric micropillars eventually magnetically activable. This work at INPHYNI will be done experimentally on the capillary bridge setup [1] and using microscopy in collaboration with J. Fresnais at Lab. Phenix (Paris). Moreover, theoretical modelization will be realized in collaboration with E. Barthel from SIMM in Paris.

The successful applicant will:

Participate to the surface fabrication, develop the experimental setup, perform experiments, analyze results, supervise students, collaborate with the staff of the ANR MADNESS project, realize oral and written reports.

Qualifications:

Applicants should be highly motivated with a strong interest and experience in soft matter and hydrodynamics. Experience with microfabrication, high speed imaging, image analysis and use of magnetic field is a plus. Ability to work independently in the context of a dynamic, interactive interdisciplinary group is essential.

Salary & Benefits: From 2600 € to 3800€ monthly gross (brut), depending on experience after Ph.D. Duration: 1 year. Renewable.

Details of how applicants should apply:

Candidates should submit their applications through the website: https://emploi.cnrs.fr/ **direct link: https://bit.ly/2ThIvNC**. For any information: Celine.Cohen@unice.fr , Xavier.Noblin@unice.fr .

Opening date on the website to apply October 22nd. **First closing date:** November 12th.