

PhD Position in Responsive Polymer Brushes for Switchable Antifouling films (SWAN)

We invite applications for a fully funded PhD position in the field of soft matter, polymer thin films, and advanced surface characterization. The project will be carried out jointly between the **Laboratoire Interdisciplinaire de Physique (LiPhy, UGA)** and the **Institut Laue-Langevin (ILL) in Grenoble, France**, offering a unique research environment at the interface of chemistry, physics, and materials science.

PROJECT: Responsive polymer brushes are surface-grafted polymer layers whose structure and properties can be modulated by applying external stimuli, such as temperature variation or salt concentration. Among several applications, these systems are excellent candidates to prepare **antifouling coatings, low-friction interfaces, and adaptive bio-surfaces**. This PhD project focuses in particular on zwitterionic polysulfobetaine brushes, a class of highly hydrated polymers which combine a reversible thermoresponsive behavior with unique antiadhesive properties. The aim of the research project is to understand how nanoscale structural changes across the temperature-driven phase transition control **friction, film elasticity, and anti-adhesive performance**.

The successful candidate will synthesize polymer brushes using controlled radical polymerization methods and characterize their properties using advanced techniques, including neutron reflectometry, atomic force microscopy, ellipsometry, QCM-D, and contact-angle measurements. **By linking molecular-scale structure to macroscopic function**, the project will contribute to the rational design of next-generation switchable coatings.

PROFILE OF THE CANDIDATE: We are looking for a motivated and curious candidate with a strong interest in **experimental research, polymer and colloidal science**, who is keen to work in a highly interdisciplinary context. Applicants should hold, or be close to completing, a Master's degree in polymer science, chemistry, physical chemistry, physics, materials science, or a closely related discipline.

We seek a candidate who is enthusiastic about laboratory work, including brush synthesis and physico-chemical characterization activities, and quantitative data analysis. Experience with polymers, interfaces, AFM, scattering methods, or data treatment is welcome but not mandatory. A solid scientific background, keen interest for learning, and good communication skills in English are essential. Self-motivation and initiative are highly valued.

WHAT WE OFFER: The project offers the opportunity to work in a **highly international and stimulating environment in Grenoble**, one of Europe's major research centers. The candidate will benefit from close interaction with two internationally recognized institutions, and **access to world-class experimental infrastructure**. This includes state-of-the-art neutron scattering instruments at the ILL, advanced nanomechanical and force microscopy platforms at LiPhy, and training in polymer synthesis, interfacial science, and modern data analysis. The PhD candidate will develop interdisciplinary expertise spanning chemistry, physics, and materials science, while building an international professional network.

HOW TO APPLY: Please send a CV, motivation letter, academic transcripts, and contact details of referees to Samantha Micciulla (samantha.micciulla@univ-grenoble-alpes.fr) and Leonardo Chiappisi (chiappisi@ill.eu). Applicants are also very welcome to contact us for more information. **The project is inclusive and unbiased with respect to nationalities and gender.**

DEADLINE: Applications will be reviewed until the position is filled.