

## Post-Doctoral Position in molecular and cellular microbiology

MAPIEM (Matériaux Polymères Interfaces Environnement Marin) is a multidisciplinary lab working on 3 research themes: (i) the study of polymer materials with controlled architecture synthesized in the laboratory and dedicated to be incorporated in marine antifouling coatings or used for extraction and detection of micro-pollutants; (ii) the study of the durability of heterogeneous materials (coatings, composites...) in aggressive environments; (iii) the study and control of marine biofilms for the design of environmentally friendly antifouling coatings. In the latter research topic, models of biofilms-forming marine bacteria are used to better understand the phenomena of bioadhesion and thus to evaluate and optimize the anti-biofilm efficiency of materials with controlled architectures designed in the laboratory.

### Job description

In aquatic ecosystems, the majority of bacteria live in close association with surfaces, as communities called biofilms. The adhesion of pioneer bacteria, prior to biofilm development has important negative ramifications in all areas that involve surfaces in immersive or humid environments, meaning in virtually all industrial activities such as most marine activities, which are the focus of researches performed in MAPIEM laboratory. To develop efficient antifouling strategies, knowledge on the mechanisms involved in bacterial adhesion and biofilm formation on specific and characterized substrata need to be deepened. A model marine bacterium *Shewanella frigidimarina* has been selected to study adhesion onto different artificial surfaces developed and studied in MAPIEM. The objectives of this work is to construct and characterize mutants of this bacterium deficient in adhesion and biofilm formation using microbiological and cell biology techniques such as microplate bioassays and confocal laser scanning microscopy. The post-doctoral candidate will have to study adhesion forces of mutant and wild-type strains of *S. frigidimarina* adhered to different coated surfaces developed for ship hulls by the laboratory. For this purpose, he/she will develop the biological application for the Atomic Force Microscope, which has been used for the past few years in the lab for materials characterization (morphological, mechanical and thermal properties).

### Eligibility

The position is opened to citizens from all nationalities. All motivated candidates with a strong background in molecular biology and cell biology will be considered and an experience in AFM will be beneficial. Applications including CV, description of research experience and contact details for two references should be sent to Maëlle Molmeret: molmeret@univ-tln.fr