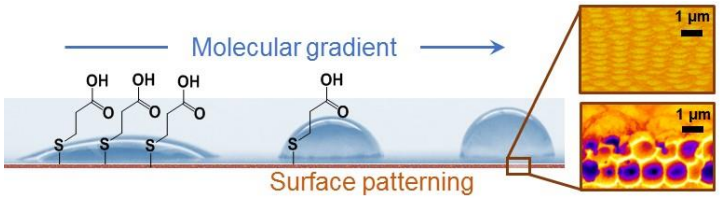
PhD Offer

Dual topographic and molecular surface modification for multiscale hierarchical gradients

The design of surfaces with anisotropic features is a very hot topic. To date, there is no general and versatile available route. This project proposes a novel approach offering a major improvement by using bipolar electrochemistry (BPE) for generating physicochemical gradients through combination of molecular grafting and tailored surface patterning.

Thanks to BPE, selective desorption of self-assembled monolayers or grafting of electroactive molecules will enable a wide panel of surfaces presenting a molecular gradient with various functionalities. Structuration of the surface, from the macroscale down to the nanoscale, will be achieved either by introducing hierarchical porosity or through nanolithography processes, thus allowing both control and amplification of these gradients. Finally, the surfaces will be characterized by dynamic wetting measurements for applications ranging from self-cleaning to lab-on-chips.



Keywords: Gradients, Surface modification, Molecular layer, Bipolar electrochemistry

Applicant profile: Background in physical chemistry or materials science.

Financial support: Expected ANR 2019 Project (Result in July 2019).

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