

Subject Proposal for Erasmus Students in Chemistry

“Elaboration of smart surfaces”

To date, increasing attention has been placed on the development of controlled switchable surfaces, also known as “smart surfaces”, that can respond to environmental stimuli. Various surface properties, such as wettability, adhesive features, biocompatibility and so forth have been demonstrated to switch reversibly on different kinds of specially designed surface.

This proposal for an Erasmus training course deals with the development of new tunable surfaces based on the controllable supramolecular recognition of cyclodextrins with electroactive polymer brushes.

The first objective will be to assemble ordered monolayers (SAMs) of cyclodextrins onto a gold surface and to prepare different polymers, using ATRP procedure, with controlled polarity, architecture and molecular weight that are able to reversibly interact with the SAMs.

The second objective will be to characterise the presence of polymers onto the surface using EQCM (Electrochemical Quartz Crystal Microbalance) and SPR (Surface Plasmon Resonance) systems. The last part of this project will be devoted to the control of the surface properties under different external stimuli.

The project will be developed in collaboration with Dr Graeme Cooke (University of Glasgow) and would last for 3 to 8 months.

Key words: monolayers, cyclodextrine, Surface.

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