

Surface functionalization methodologies – Application to (electro)analysis

Sophie Griveau, Cyrine Slim, and Fethi Bedioui

Chimie ParisTech, Université PSL, CNRS, Institute of Chemistry for Life and Health Sciences, 11 Rue Pierre et Marie Curie, 75005 Paris, France
Email: sophie.griveau@chimieparistech.psl.eu

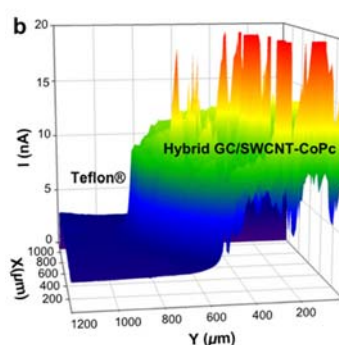
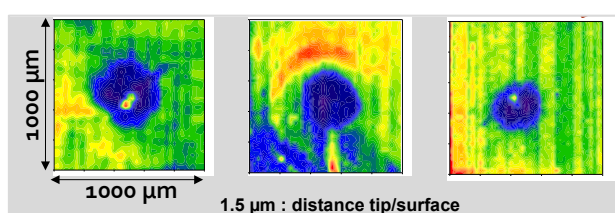
The modification of the interfacial properties of materials is of prime importance in many fields such as energy conversion, biomaterials preparation or sensors development. Electrochemistry is particularly attractive to implement surface modification due to its relative low-cost and the numerous possibilities it offers for this aim [1].

We have developed in our group different methodologies over the years notably for the design of electrochemical sensing devices for the detection of specific targets in complex medium such as biological and environmental samples. The works focused on the development of electrodeposited layers and composites materials so as to control the selectivity and sensitivity for the detection [2].

We also developed original methods for global and local surface modifications by electrochemical means so as to fine-tune the electrode properties, using CuAAC click chemistry reaction. The methodologies were transposed for the modification of non-conductive materials notably those used for the development of microfluidic devices [3].

The presentation will give an overview of these strategies with examples of sensors and biosensors development, notably for the detection of redox stress markers in biological medium and pollutants in water and discuss current challenges.

a



Illustrative SECM images of modified interfaces (a) and (b) glassy carbon

References

- (1) Griveau S., Kanoufi F., L'actualité chimique (2015) 400-403.
- (2) Zou, Y; Griveau, S; Ringuedé, A; Bedioui, F; Richard, C; Slim, C, (2021) *Frontiers in Chemistry*, 9, 812909.
- (3) Slim, C., Ratajova, E., Griveau, S., Kanoufi, F., Ferraro, D., Perrerd, C., Bedioui, F. (2015) *Electrochem Comm*, 60, 5-8.