PhD Position – Electrochemistry/Materials Science -Starting Date: September-October 2017

Electrochemical Silicon Nanoprocessing for the Fabrication of Functional Surfaces

Silicon micro- and nanostructuration is of crucial importance for microelectronics, solar cells and for promising emerging technologies in nanoelectronics, biosensing devices and water-splitting cells. These applications make the fabrication of Si nanostructured arrays a very hot topic that has attracted tremendous attention. In this context, templated electrochemistry, which can be operated in ambient conditions, enables the simultaneous fabrication of individual nanostructures at designated spots on a large area is very attractive for manufacturing such arrays.

We are looking for a highly-motivated PhD candidate to work on a 3-year project at the ISCR (Institut des Sciences Chimiques de Rennes), located at the University of Rennes in France. The research project is focused on the development of silicon structuration processes for the fabrication of functional surfaces. More specifically, the candidate will use electrochemical techniques such as templated photoelectrochemical etching and nano-electrodeposition in order to fabricate well-defined arrays of *i*) silicon nanowires and *ii*) silicon nanoporous microcells. He will then functionalize these surfaces with redox active molecules and study their electrical and photoelectrochemical properties. The final goal is to use these functional surfaces for biodetection and microelectronic devices.

The project duration is 3 years and the founding is provided by the ANR (Agence Nationale de la Recherche). The salary is ~1400 € per month. The successful candidate will have an access to the equipment present at the ISCR (scanning probe microscopy, electron microscopy, potentiostats, ellipsometer, FTIR, XRD…) and to the clean room facilities located at the IETR (Institut d'Electronique et de Télécommunication de Rennes), that is located very close to the ISCR.
The candidate must have a strong background in physical chemistry and/or materials science and an interest for electrochemistry. A strong motivation for research and good communication skills are required (fluent English or French speaking is mandatory).

References:

L. Santinacci, M. Diouf, M. Barr, B. Fabre, L. Joanny, F. Gouttefangeas, G. Loget ***ACS Appl. Mater. Interfaces*** 2016, *8*, 24810-24818
K. Cho, G. Loget, R. M. Corn. ***J. Phys. Chem. C*** 2014, 118, 28993-29000
G. Loget, R. M. Corn, ***Chem. Eur. J.***, 2014, 20, 10802-10810

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Please send your records (CV + letters of recommendation) to:

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