Context and Job Description:
A PhD position co-financed by Université Grenoble Alpes (UGA) and the Institut Laue-Langevin (ILL) is available on the following subject:

"*Conformation and function of proteins at homogeneous and nanostructured interfaces*"

The immobilisation of proteins at interfaces is important to many medical, biomedical and biotechnological applications. However, the interaction of the proteins with the immobilising interface can have a detrimental effect on their activity, due to the surface-induced changes in their structure and mobility.

By combining different lab-based techniques such as electrical impedance spectroscopy, quartz crystal microbalance, microscopy, with equipment from large scale facilities (Neutron and X-ray Reflectometry, Small Angle Neutron and X-ray Scattering), we plan to study the effect of the immobilization of a particular membrane protein, the sodium-hydrogen exchanger NhaA, which has relevant biotechnological applications.

The PhD student will be hosted in the TIMC laboratory (UGA) and at the Institut-Laue Langevin and jointly supervised by Dr. M. Maccarini (SyNaBi group at TIMC), Prof. D. Martin (SyNaBi group at TIMC) and Dr Ben Humphreys (ILL).

SyNaBi group at TIMC laboratory is a dynamic research team with a focussed thematic axis in biological engineering. Our primary objective is to conduct fundamental research to investigate the role of biological molecules (e.g., enzymes, proteins) in various applications, including lipid bilayers, biosensors, biomimetic cell systems, and drug delivery systems. Our research endeavours span from the nanoscale to the microscale and macroscale, enabling us to gain comprehensive insights into these complex systems. To achieve this multidimensional exploration, the SyNaBi team harnesses its core expertise in electrophysiology, biophysics, large-scale facililities (neutron and X-ray scattering), bioelectrochemistry, opto-acoustic intravital microscopy, biopolymers, drug delivery, and cell/molecular biology.

The Institut Laue-Langevin is an international research centre at the leading edge of neutron science and technology. As the world's flagship centre for neutron science, the ILL provides scientists with a very high flux of neutrons feeding some 40 state-of-the-art instruments, which are constantly being developed and upgraded.

Expected profile and skills:

- Degree allowing enrolment for a PhD (such as MSc, Master 2 de Recherche, Laurea or equivalent) in physics, materials science, chemistry or closely related science
- The candidate should be able to work in a highly interdisciplinary environment.
- background in large scale facilities experiments (neutron and x-ray scattering), and knowledge computer programming (C++, Python) would be an advantage
- Ability in handling of biological materials would be an advantage

Working Conditions
The successful candidate will be enrolled full-time in the doctoral school of UGA and based 50% at the ILL (Grenoble, France) and 50% at TIMC. Furthermore, a varied pedagogical training programme will be offered to the successful candidate throughout the 3-year PhD project.

Questions can be addressed to marco.maccarini@univ-grenoble-alpes.fr, donald.martin@univ-grenoble-alpes.fr, or humphreys@ill.fr