

### **POST-doctoral position**

**Starting date:** 10/09/2021

**Duration:** 12 months

**Title:** Bio samples encapsulation and shaping for atom probe tomography

**Project:** BIO-TAP

**This project is funded at 100% by the Regional Council of Normandy**

**Responsible of the project:** Angela Vella

**Collaboration:** GPM – UMR 6634 / GlycoMev

**Team:** Angela Vella (GPM), Emmanuel Cadel (GPM), Laurence Chevalier (GPM), Arnaud Lehner (GlycoMev)

The GPM laboratory is inviting applications for a postdoctoral position in the field of biosamples encapsulation and preparation for 4D imaging. The position is funded within project Bio-TAP which gathers experts in light-matter interactions in the ultrafast regime, laser physics and 3D microscopy and atom probe tomography and biosamples isolation and encapsulation from the GPM, GlycoMev, CORIA and Envi laboratories at the university of Rouen. This multidisciplinary project aims at developing a novel high-resolution 4D microscopy platform by using THz-APT (atom probe tomography) instrument to image biomaterials.

**This research will be developed at the Groupe de Physique des Matériaux (GPM) in collaboration with the laboratory of Glycobiology and Plant Extracellular Matrix at the University of Rouen FRANCE**

#### **Description of the project:**

Activities at the GPM laboratory are focused on investigating the link between material properties and their features at the nanometer scale. One of the laboratory's teams is the "advanced instrumentation team" (ERIS) where the Tomographic Atom Probe was developed in the 1990s. Today, ERIS is one of the world's leading teams in the development of laser-assisted 3D atom probes, in particular concerning field evaporation processes and laser matter interaction at nanoscale.

The recent development of THz-assisted atom probe tomography (APT) reduced the heating of the sample during the analysis, opening the instrument to the analysis of biomaterials. However, to be analysed in atom probe, the samples have to be prepared in a rigid nanoneedle with an end radius of a few ten of nanometers. The biomaterials (antibodies, membranes, ..) have to be encapsulated in a matrix at a very high density and then the nanoneedle shape is obtained by focused ion beam (FIB) milling. The objective of this post-doc position is to develop methods for the encapsulation and sample preparation of biomaterials for APT analysis.

#### **Qualifications and experience:**

The applicant should hold a PhD in the fields of biology or applied physics, with experimental skills in electron microscopy and correlative microscopies. Experience in Focused ion beam milling/or cryo-microscopy will be appreciated.

The project involves the design and set-up of new methods for sample encapsulation and preparation as well as data collection and analysis within a collaborative project. The candidate



should then have an affinity for working in multidisciplinary teams. He/She will indeed have an active role in this collaboration by interacting with the different partner laboratories.

**Contact :** *Please submit your application (including a cover letter and a detailed CV) by e-mail*

**Pr Angela Vella and Dr. Emmanuel Cadel**

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