

## **Electroactive Bio-functional Fibrils Development for Investigating Host-Pathogen Interactions**

A PhD studentship is available within Dr. M. Daniela Angione's group in the School of Chemistry and in the Centre for Research on Adaptive Nanostructures and Nanodevices at Trinity College Dublin (TCD). The project will be undertaken within the Advanced Materials and Bioengineering Research Centre (AMBER), being aligned with the Materials for Health platform. **This position is funded by Science Foundation Ireland under the Starting Investigator Research Grant (SIRG) award.**

### **Project Overview:**

The project focuses on the development of new electroactive functional fibrils with specific mechanical, chemical and biological properties, to better resemble the *in vivo* environment in modelling host-pathogen interactions.

Given the periodic emergence of new and old infections, and the pressing challenges from antimicrobial resistance and pandemic threats such as SARS, Ebola, Covid-19, modern, disease-relevant, cell-based phenotypic assay methodologies represent critical target for improving our knowledge of the dynamics of host-pathogen interactions in their natural environment and the development of new therapies.

In this context, organic bioelectronics is showing significant advancement in the development of *in vitro* model systems as well as diagnostic and implantable devices, bridging the gap between living organisms and electronics. The capability of organic electronic materials, in fact, in conducting and processing both electronic and ionic (bio)signals, tightly coupled via electron-ion charge compensation, lays the ground for the development of multivalent tools with enhanced sensitivity. Moreover, organic electronic molecules and polymers can be *ad hoc* designed to possess desired physical, chemical and biological properties, using synthetic or post processing modification tools.

***The aim of the project is to develop a 3-dimensional glycosylated electroactive system capable of resembling a dynamic 3-D microenvironment in terms of its biological, chemical and physical/mechanical properties. The 3-dimensional model system will achieve a high degree of sensitivity building on the specificity of the glycan-lectin or glycan-glycan interactions, and the remarkable analytical figure of merits of the electronic platform.***

The PhD student will work closely with other members of a multidisciplinary environment including PIs, postdoctoral and postgraduate researchers within the School of Chemistry and AMBER. Moreover, as part of the research training the student will closely interact with Prof. R. Owens research group at the University of Cambridge (UK).

### **Eligibility**

Applications are invited from excellent candidates with a Bachelor/Master Degree in Chemistry, Nanoscience, Materials Chemistry, Advanced Materials Science (or related disciplines). Experience in organic semiconductor, biomaterials, nanotechnology and "smart nanomaterials" would be advantageous but not essential.

### **How to apply:**

CVs with the names and addresses of three referees should be e-mailed to: Dr. M. Daniela Angione ([angionem@tcd.ie](mailto:angionem@tcd.ie)). Positions will remain opened until filled, but preferred start date is September 2020. *Due to Covid-19 emergency, the starting date might be delayed in line with College's recommendations.*

*The School of Chemistry holds an Athena SWAN bronze award, and provides equal opportunities and equal expectations for individuals regardless of their gender identity or expression, race, culture, sexual identity or any other attribute*