Funded by the European Union

Research Assistant

Biomedical Application Group (GAB) of IMB-CNM(CSIC) and CIBER-BBN

Flexible Neural Interfaces Based on Graphene Micro-Transistors

Description of the research group

The mission of GAB group is to take advantage of the technological capacities available at the Clean Room of the IMB-CNM to provide novel solutions for different biomedical applications.

Neural technologies based on micro- and nanosystems are key tools for studying and understanding the brain. In particular, we are investigating the use of graphene for the next generation of neural interfaces. During the last years, we have carried out a pioneering work in the development of the technological processes to integrate graphene solution-gated field-effect transistors (SGFETs) in flexible neural interfaces, demonstrating its unique capabilities for performing high channel count and wide bandwidth recordings. We are exploring the particular capabilities of these devices in collaboration with other research groups to take profit of this unique capability for understanding the brain and some of their pathologies such as epilepsy, stroke or migraine.

Description of the project

META-BRAIN (MagnetoElectric and Ultrasonic Technology for Advanced BRAIN modulation) is an EIC Pathfinder European project that brings together seven expert partners in nanotechnology, nano- and microelectronics, novel materials, brain science, clinical neurology, and computational modelling with the aim of achieving precise spatiotemporal control of brain activity using magnetoelectric nanoarchitectures that can be polarized by non-invasive, remote magnetic fields.

In particular, we offer a 2 year contract to work in the framework of this project where we will develop novel gSGFET-based neural interfaces for being integrated in a closed-loop system. For that, different microfabrication strategies to improve the quality of the neural recordings will be developed and experimentally validated in collaboration with the international partners of this project.

Requirements

- BSc in Physics, Nanoscience, Electronic Engineering, Biomedical Engineering or similar
- MSc or PhD in these related areas will be positively considered.
- Knowledge in any of these fields will be also positively considered but are not essential:
  - Experimental techniques for micro/nanofabrication
  - Electronic instrumentation for electrophysiological applications
  - Programming in Python language for data analysis
- Ability to demonstrate scientific writing and communication skills in English. Ability to work with highly qualified professionals, use own initiative, where appropriate, and be proactive in approach to work.

Conditions	Full time work (37,5 h/week) Salary will depend on qualifications and demonstrated experience
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