

Microelectronic Ion Sensitive Sensors development for brain activity monitoring

PhD Position

Description

The [GAB group](#) is placed at the [IMB-CNM \(CSIC\)](#) and it also belongs to the [CIBER-BBN](#). The group takes advantage of the technological capacities available at the Clean Room of the IMB-CNM in order to provide novel solutions to different biomedical application

In particular, we are investigating the use of graphene as the active material to interface neural tissues. In our group, we have developed the technological processes to integrate graphene transistors in flexible probes to record brain activity. In fact, we have demonstrated its unique ability to record slow activity (< 0.1 Hz) which are of special interest for understanding neural disorders such as epilepsy, stroke or migraine and investigate novel biomarkers for its monitoring.

Description of Project

The research activity of the candidate will be mainly part of the MANIAC project (funded by the Ministerio de Ciencia e Investigación) and it will be focused on the fabrication and characterization of electrochemical sensors for brain recording.

The main objective of this PhD position is to develop ion-sensitive sensors compatible with the currently available graphene transistors technology. In particular, it will be focused on the development of K⁺ and pH sensors due to its relevance in several neural disorders for quantifying brain homeostasis alterations; as the recording of simultaneously information on chemical and electrical signals with high spatial resolution will pave the way to gain mechanistic insight into brain working principles and its pathologies.

The PhD candidate must have finished a master degree in the areas of Electrochemistry, Nanoscience/Nanotechnology or Chemistry/Physics.

Summary of conditions

We offer a PhD contract for the full duration of the thesis within the MANIAC project. The starting date for the contract will be agreed with the candidate, and can be immediate. The PhD student will have access to the Unique Scientific and Technical Facility (ICTS) fabrication clean room facilities and the characterization laboratories at the IMB-CNM, and will be trained in all the required technologies. Besides the sensors fabrication and lab characterization, sensors are expected to be tested with highly recognized electrophysiological groups.

How to apply

All applications must be sent to Dr. Anton Guimerà-Brunet and Dr. Gemma Gabriel to the mail:

anton.guimera@imb-cnm.csic.es & gemma.gabriel@imb-cnm.csic.es

- This offer can be found on: <https://www.imb-cnm.csic.es/en/about-center/careers/open-positions>
- More information on IMB-CNM: <https://www.imb-cnm.csic.es/en/>