

## Job title Implementation of ion-sensitive membranes on graphene FETs

### Main tasks and responsibilities

In this project, we want to implement ion-sensitive membranes on gSGFETs to form novel Ion-Sensitive graphene FETs (ISgFETs). The aim here is to register the ionic response with these devices, together with DC-coupled recordings. This work will be focused on the characterization of the ion-selective membranes on gSGFETs surface, and finally monitor the response to different ions with the resulting ISgFET.

The successful candidate of this research program will be involved in different activities, including:

- Electrical characterization of graphene transistors by means of current voltage curves (I/V) and time continuous monitoring.
- Deposition of ion-membranes on different substrates (SiO<sub>2</sub>, SU-8, ...) prior to the implementation to final devices.
- Calibrations with controlled ionic concentrations with ISgFETs.

### Background and skills

BSc in Chemistry, Nanotechnology, or equivalent.

- Chemical basis will be considered.
- Nanotechnology basis will be considered.
- High motivation and capacity to learn in a multidisciplinary environment.

### Description of Group/Project

In the Biomedical Applications Group we provide novel solutions to different biomedical applications, taking advantage of the technological capacities available at the Clean Room of the IMB-CNM. Currently, one of our research lines is based on the use of micro- and nanosystems for in vivo and in vitro studies focused in understanding the brain. Recently, we have demonstrated the use of graphene solution gated field effect transistors (gSGFET) to record brain activity signals. Particularly, brain homeostasis is tightly related with the ion concentration dynamics, which is also linked with different neural disorders.

### How to apply

All applications must be sent to Dr. **Sergi Brosel Oliu** ([sergi.brosel@imb-cnm.csic.es](mailto:sergi.brosel@imb-cnm.csic.es)), Dr. **Elisabet Prats** ([elisabet.prats@csic.es](mailto:elisabet.prats@csic.es)) and Dr. **Anton Guimerà** ([anton.guimera@csic.es](mailto:anton.guimera@csic.es)).

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