

**Project Description****PhD Thesis****Graphene based biosensors for neurotransmitter detection****Description of group/project**

The Biomedical Applications Group takes advantage of the technological capacities available at the Clean Room of the IMB-CNM to provide novel solutions to different biomedical applications. 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.

In our group we are investigating the use of graphene as the active material to interface neural tissues. This includes the study of the fundamentals of the material, its integration on the standard nano- & microfabrication processes, the characterization of the fabricated devices and its application on *in-vivo* and *in-vitro* environments. In particular, we have demonstrated that graphene-based gSGFETs (Solution Gated Field Effect Transistors) are a very promising tool for recording neuronal activity as it allows the recording of infra-slow signals, where the current technology based on metal electrodes present important limitations.

**Tasks**

The research activity of the candidate will be framed mainly as a part of the Graphene Flagship Project, which is focused on the development of graphene-based neural interface technologies for the cortex, retina, and peripheral nerves. This multidisciplinary project involves integration of thin film technologies, surface functionalization, with special emphasis in the fabrication and electrical characterization of graphene-based transistors for neural recording & biosensing. The successful candidate will be involved in activities related to the design, fabrication, and functionalization of graphene-based biosensing devices in order to develop a biosensing platform for the detection of neurotransmitters.

**Requirements:**

- Education: Master in Materials Science, Nanotechnology, Engineering, Chemistry, Physics, or equivalent degrees.
- Knowledge and Experience: Experience in electronics, electrochemistry and data analysis.

**How to apply:**

Applications should be sent to **Dr. Anton Guimerà** ([anton.guimera@csic.es](mailto:anton.guimera@csic.es)) and should include:

- A cover letter
- A full CV including contact details