

Selective functionalization of graphene transistors for biomedical applications

Description

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. We are investigating the use of graphene as the active material to monitor relevant neural biomarkers such as neurotransmitters for brain diseases.

In particular, graphene-based gSGFETs (Solution Gated Field Effect Transistors) will be selectively chemically modified by organic molecules to specifically monitor neurotransmitters. The work will be based on the development of the functionalization protocols to activate photochemically the organic molecules, and verify with morphological and electrical techniques its feasibility and the proper attachment of the molecules.

Education

- BSc in Chemistry, Nanotechnology or equivalent

Knowledge & skills

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

Tasks

This research program is part of the Graphene Flagship initiative. Within this research program, the successful candidate will be involved in different activities, including:

- Chemical modification of the surfaces
 - Photochemical activation of the organic molecules
 - Characterization of devices by means of current voltage curves (I/V).
 - Evaluation of the behaviour of different proposed surface modifications by AFM or similar techniques
-

Contact Biomedical Applications Group
IMB-CNM, CSIC
Dr. Elisabet Prats
elisabet.prats@csic.es