

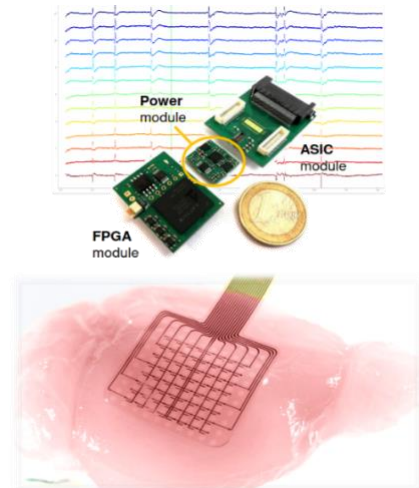
Research Electronic Engineer / PhD position

Instrumentation for recording neuronal signals with high-density graphene micro-transistor arrays

Description

Graphene micro-transistors have demonstrated unique capabilities for recording brain signals, including infra 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.

The aim of this position is to develop novel electronic instrumentation for recording brain signals using high-density arrays of graphene micro-transistors. This research is required to exploit the full potential of this technology in the neuroscience field and enable its translation to the clinical practice.



Background and skills

- MSc/BSc in Electronic engineering or any similar background that have covered the following topics: analog circuit design, FPGA-based platforms, instrumentation, data processing.
- Knowledge of FPGA kits.
- Experience in Python programming language.
- Capability of working as a team.

Tasks

- To develop an instrumentation setup for laboratory characterization of graphene micro-transistor arrays. This instrumentation will be used to measure the steady state transfer curves, the intrinsic noise characteristics and the frequency response of the neural interfaces fabricated at IMB-CNM clean room.
- To support the development of an electronic system for interfacing the already developed ASICs for acquiring neurophysiological signals in in-vivo experimental environments, aiming to record signal from high-density arrays (~1024 sensors). This acquisition system consists in a custom FPGA-based interface to implement the communications between the ASIC and a PC.
- To validate the developed signal acquisition system at neurophysiological laboratories by means of different European collaborations.

Contact

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