

GEMMA GABRIEL

CV

PARTICIPANT AT:

A DIALOGUE WITH THE CEREBRAL CORTEX: CORTICAL FUNCTION AND INTERFACING

April, 29th-30th, 2015, Barcelona

Gemma Gabriel-Buguña, Researcher at the Biomedical Applications Group, **Microelectronics Institute of Barcelona**, (IMB-CNM, CSIC), Barcelona, Spain

Gemma Gabriel is permanent researcher in the Biomedical Applications Group of the IMB-CNM (CSIC) since 2010. She obtained a chemistry degree from the Autonomous University of Barcelona in 2000, and her PhD in Materials Science in 2005. The main mission of the group, where she is undertaking her investigations, is to take advantage of technological capacities that the Clean Room Facilities of IMB-CNM offers in order to create microsystems, developing technologies and to craft innovative devices capable of providing novel solutions to different applications in the biomonitoring field. In the last seven years Gemma Gabriel has been involved in several projects related to the development of multisensing platforms for biomonitoring for cell culture detection and in neural applications. Gemma Gabriel expertise is related to the sensor design, fabrication with microelectronic technology and characterization of the sensors. Her background also is related to the use of different biocompatible electrode materials such as platinum, black platinum, carbon nanotubes or graphene in substrates such as silicon, pyrex, and SU8.

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ABSTRACT

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Graphene as Brain Interface

Neural interfaces are still nowadays a challenge from the technological and biological point of view, because there is still a need to optimize the biological-artificial interconnection. Just because these devices will allow to study and learn about brain functions in acute or chronic experiments, make of them one of the major research lines in the coming years. Aspects such as improvements in biocompatibility, signal noise, electrodes decreasing the surface area, improving the electrode-electrolyte interface, etc are some of the most important key aspects to be improved. One of the most important research lines of our group has been always related with the design and manufacturing of neural interfaces for in vivo and in vitro recordings. New manufacturing techniques, new materials, new designs etc have been incorporated in the last years. The new research line initiated in the group is related with the study of graphene as a neural interface. It pursues the validation of this material as neural interface, as well as the fabrication of devices on flexible substrates that minimize brain damage, and can be used for both neuronal recordings and stimulation. Prototypes of microelectrode arrays are being fabricated in order to study if the properties and advantages of graphene such as flexibility, biocompatibility and capacitance allow improvements in the complex world of the neural interfaces.

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