

PhD Position Available at the MESSI Group of the Institute of Microelectronics of Barcelona (IMB-CNM, CSIC)

## Memristors based on High-k Dielectrics, 2D Materials and Printed Technology

**Application deadline: 2022-July-15**

### PhD Topic Brief Description

Memristors are mostly built by Metal-Insulator-Metal (MIM) structures that show the resistive switching (RS) phenomenon, consisting in a non-volatile sudden change of the electrical resistance of the structure as a result of the application of an electrical stimulus. These devices are being extensively investigated as promising candidates for a wide variety of potential applications including non-volatile resistive random access memories (RRAM), digital logic circuits and hardware security systems. In addition, in the last years, an intense research is currently ongoing to evaluate their potential as synaptic devices in brain-inspired neuromorphic circuits whose aim is to replicate brain functions, such as reasoning, learning from experience, or decision-making.

The PhD work proposed is focused on the fabrication and advanced characterization of memristors based on high-k dielectrics, 2D materials, and printed technologies. The tasks will combine design, structural characterization, advanced electrical characterization, and reliability assessment of the fabricated devices. A three years PhD work is offered.

### Requirements

- ✚ M. Sc. in Physics, Electronic Engineering, or Materials Science
- ✚ Great motivation for scientific work and ability for team work
- ✚ Fluency in English
- ✚ Basic knowledge on device physics and computational skills
- ✚ Starting date: September 2022

### Applications

Interested candidates should send his/her CV to Mireia Bargalló González ([mireia.bargallo.gonzalez@csic.es](mailto:mireia.bargallo.gonzalez@csic.es)) and Francesca Campabadal Segura ([Francesca.Campabadal@csic.es](mailto:Francesca.Campabadal@csic.es)) before 15<sup>th</sup> July 2022.

