

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

## Fabrication and Variability Assessment of Memristors based on High-k Dielectrics, 2D Materials and Printed Technology

### Description

Memristors are mostly built by Metal-Insulator-Metal (MIM) structures that show the resistive switching 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, 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 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 a comprehensive variability and reliability assessment of the fabricated devices.

### 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

### Applications

Interested candidates are invited to submit their 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)).

