DC 9	Comprehensive study of doping effects on the ferroelectricity in epitaxial HfO_2 films
Host Institution	Institute of Materials Science of Barcelona
Supervisor	Florencio Sanchez
Duration	36 months
Subject Area	Materials, Ferroeletrics
Doctoral degree	Materials Science PhD Programme at Universitat Autònoma de Barcelona

Description

There is a high demand on ultra low-power memory devices to be deployed for edge computing for the Internet of Things (IoT) devices. For this purpose, ferroelectric materials are considered as one of the best solutions. The ICMAB-CSIC team has pioneered the development of epitaxial HfO_2 thin film capacitors. Epitaxial films will be used as model systems for better understanding of doping effects and for enhancing polarization and reliability of ferroelectric hafnia. Therefore, the selected candidate will learn how to fabricate the epitaxial hafnia thin films, becoming an expert in the entire process: from the epitaxial growth to the device fabrication and will work on the optimization and understanding of the underlying physics. The candidate will spend a period at the University of Cambridge and University of Minho to get a deep understanding of these devices.

Project-specific selection criteria:

- Master's degree in materials engineering, chemistry or physics.
- Affinity for experimental work.

Other criteria:

- Highly proficient English language skills.
- Willingness to work collaboratively in a research environment.
- A strong commitment to their own continuous professional development.
- Willingness to travel and work across Europe.

Additional information

As part of the MSCA programme, all recruited MASAUTO researchers must comply with the Horizon Europe MSCA eligibility criteria:

a) Doctoral Candidates must not have a doctoral degree at the date of the recruitment by the host organisation.

b) At the time of recruitment by the host organisation, DCs must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the three years immediately prior to the recruitment date. Compulsory national service and/or short stays such as holidays and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

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