Institute of Microelectronics of Barcelona IMB-CNM CSIC

The **IMB-CNM** is the largest institute in Spain dedicated to the research and development of Micro and Nano Technologies and Microsystems and with unique capabilities in silicon technology. It belongs to CSIC since its foundation in 1985 and is distinguished as a María de Maeztu Unit of Excellence.

IMB-CNM aims to contribute to the advancement of knowledge and to the economic and social development of society, as well as to the training of researchers and engineers and to the advice to public and private entities.

The research activities of IMB-CNM are dedicated to Micro/Nano Integrated Systems: miniaturized electronic systems which include sensing and/or actuating capabilities in addition to electronic information processing, power management and external interfaces.

The IMB-CNM is located on the Autonomous University of Barcelona (UAB) Campus and contains the largest clean room facilities in Spain with full capability to process its own CMOS technologies and laboratories.

Project Type: TFG

Project Title: Characterization of microfabricated NDIR sensors for early fire detection and prevention.

Research Group: MicroEnergy Sources and Sensor Integration Group (MESSI)

Project Description:

- Understand the fabrication flow of the microfabricated NDIR (non-dispersive infrared) sensor. Measure key performance parameters, including electrical conductivity, thermal characterization, IR radiation calibration for diferent wvelengths, explore diferent filters to maximize smouldering fire and flame detection. This includes designing the experimental setups and programming measurement equipment with LabVIEW to perform the measurements. Critically analyze the results to deliver optimum performance parameters.

Work Plan:

- Review state of the art NDIR sensors for fire detection focusing on MEMS based solutions, and required IR filters to select the appropriate wavelength which maximizes smouldering and flame fire detection.
- Work with researchers in charge of the lab with measurement setups and program LabVIEW virtual instruments to characterize and validate the response of the different NDIR designs and the different IR filters used.
- Analyse the collected data to assess sensor performance and accuracy.

Candidate desired studies:

- ✓ BSc in Nanoscience and Nanotechnology

Application Process:

Before applying, please **check with your TFG/TFM program supervisor,** as he/she may already be coordinating with us to assign the project.

If there is no such coordination**, complete this form and send your CV and a motivation letter** to **Talent@imb-cnm.csic.es**, with the **subject: "TFG/TFM at IMB-CNM"**

Carrer dels Til·lers s.n., Campus UAB | 08193, Cerdanyola del Vallès
https://www.imb-cnm.csic.es | talent@imb-cnm.csic.es
+34 93 594 7700

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Your CV will be forwarded to the Researcher leading the project who will contact you directly if interested.

Check our website for more information about the IMB-CNM and our research activities

https://www.imb-cnm.csic.es/en

Take the next step in your research career with us!

*By applying, you accept our data protection policy.

**IMB-CNM (CSIC) adheres to the European Charter and Code of Conduct for Researchers, ensuring full alignment with their principles and requirements, including equal opportunity, transparency, merit and ability, caring for an open, fair, and excellence-based hiring processes.

IMB-CNM holds the HR Excellence in Research award, which acknowledges CSIC's commitment to continuous improvement in HR strategies for researchers.

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