

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: The 21st Century Lab Notebook: Building a Practical Documentation Framework for Nanoscience Research

Research Group: Micro and Nanofabrication Clean Room

Project Description:

- ❖ This project aims to introduce undergraduate students to the principles of scientific documentation and reproducibility in experimental nanoscience.
- ❖ The student will explore existing digital tools and practices, design simple templates for documenting laboratory processes, and apply them to a real experimental case.
- ❖ The final outcome will be a practical guide to help future students improve the traceability and clarity of their lab work.

Work Plan:

The project will follow a structured and accessible approach, allowing the student to progressively understand, design, and apply a basic documentation framework in a real research context:

Phase I: Introduction and Literature Review

- Understanding the Problem: The student will explore why documentation is essential in experimental science, especially in interdisciplinary fields like nanoscience.
- Tool Exploration: A basic review of digital tools such as Markdown, Git, and shared repositories will be conducted, focusing on usability and accessibility for students.

Phase II: Template Design

- Simple Template Creation: The student will design basic templates for documenting one or more experimental processes, such as:
 - Sample preparation.
 - Measurement sessions using microscopy or electrical characterisation.
 - Recording experimental parameters and observations.
- Feedback and Iteration: Templates will be reviewed with the support of a supervisor or research group and improved based on usability.

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Phase III: Application in a Real Case

- Pilot Documentation: The student will apply the templates to a real lab activity, documenting the process in real time.
- Reflection and Improvement: The student will reflect on the experience, identify challenges, and suggest improvements to the documentation approach.

Phase IV: Final Reporting

- Best Practices Guide: A short, practical guide will be created to help future students document their lab work more effectively.
- Final Thesis Document: The student will write the thesis, including background, methodology, results, and conclusions.

Candidate desired studies:

- ✓ BSc in Physics
- ✓ Double Bachelor's Degree in Physics and Chemistry
- ✓ BSc in Nanoscience and Nanotechnology
- ✓ BSc in Electronic Engineering for Telecommunications

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"**

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.