

PREDOCTORAL RESEARCH FELLOWSHIP

Formación de Personal Investigador (FPI)

Project: High-Performance Microwave Sensors for Civil Engineering, Bio-Sensing, and Agrifood Industry Applications (μ WAVE-SENS II)

Project Ref.: PID2025-169278OB-I00

Lead PIs: Prof. Ferran Martín & Dr. Ferran Paredes

RESEARCH LINES & DOCTORAL THESIS SCOPE

The selected candidate will carry out a PhD thesis within the national research project **μ WAVE-SENS II** at UAB. The research encompasses electromagnetic modeling, design, fabrication, and experimental validation of next-generation planar microwave sensors across three strategic sectors:

1. Structural Health Monitoring	Conformal planar microwave proximity sensors for real-time concrete crack tracking, suspended cantilever vibration detectors, and microwave inclinometers for slope ground motion detection.
2. AI-Assisted Biosensing	Artificial Intelligence (machine learning)-driven microwave biosensors for real-time, non-invasive / in-vitro selective detection of glucose and electrolytes (Na^+ , K^+ , Ca^{2+}) in blood and urine.
3. Agrifood Quality & Purity	Ultra-high sensitivity, contactless, reconfigurable single-frequency microwave liquid sensors for quality control, purity verification, and adulteration detection in edible oils and milk.

CANDIDATE REQUIREMENTS & FELLOWSHIP DETAILS

Candidate Profile & Requirements:

- **Degree:** MSc degree in Telecommunications, Electronic Engineering, Physics, or equivalent.
- **Skills:** Knowledge/interest in RF/Microwave circuits, EM solvers (CST, HFSS, ADS), instrumentation, or machine learning.
- **Languages:** Fluency in spoken and written English.
- **Motivation:** Drive to publish in high-impact journals (e.g. IEEE T-MTT) and participate in tech transfer.

What We Offer:

- **4-Year Predoctoral Contract** fully funded under Spanish Ministry of Science, Innovation and Universities. **Expected start date: 1st quarter of 2027**
- High-impact PhD thesis (proven track record of Extraordinary Doctorate Awards & other awards).
- Funded research stays abroad and international IEEE conference attendance.

INTERESTED CANDIDATES SHOULD SEND CV & ACADEMIC TRANSCRIPTS TO:

Prof. Ferran Martín (Email: ferran.martin@uab.cat)

Dr. Ferran Paredes (Email: ferran.paredes@uab.cat)

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Project PID2025-169278OB-I00 funded by MICIU/AEI/10.13039/501100011033 and by ERDF/EU.



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