

# Position Offered: POSTDOCTORAL RESEARCHER

## Project: *Ultra-low cost sensors for wearables and Industry 4.0* (ULTRA-WEAR)

**Technological and scientific fields:** Sensors. Nanotechnology, Artificial Intelligence, Edge Computing

**Location:** Madrid, Madrid. Instituto de Ciencia de Materiales de Madrid.  
<https://www.icmm.csic.es/>

**Research Group/PI:** 2D Foundry. Andres Castellanos-Gomez and Carmen Munuera.  
<https://sites.google.com/view/2dfoundry>

### PROJECT SUMMARY

The ULTRA-WEAR project focuses on the development of ultra-low cost light, temperature, strain, and humidity sensors using van der Waals materials and an innovative dry deposition method. These sensors will be integrated into wearables and Industry 4.0 applications. The project aims to launch the Proof of Concept and Prototyping platform of the institute and involves collaboration with the AI Lab platform to develop machine learning algorithms that optimize sensor performance, thus consolidating the ICMM's position as a center of excellence in information technologies.

### PROFESSIONAL PROFILE

#### Minimum requirements:

- Academic degree: PhD in Physical Sciences
- Proficiency in Spanish and English

#### Merits to be considered:

Proficiency in the following techniques: Atomic Force Microscopy (AFM), Magnetic Force Microscopy (MFM), and/or Scanning Probe Microscopy (SPM). Knowledge in the development and characterization of two-dimensional (2D) materials. Techniques for deposition and exfoliation of 2D materials. Experience in: technology transfer activities and commercialization of prototypes, including patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.). Collaboration on Proof of Concept and Prototyping platforms. Experimental setups. Development of programs for data acquisition and analysis. Development of machine learning algorithms in collaboration with AI platforms. Working in private industry.

### WHAT IS OFFERED

A DRFC1-type contract for four years. The ULTRA-WEAR project utilizes advanced technologies and interdisciplinary collaborations to develop innovative sensors. The training plan includes 240 ECTS over four years, combining supervised lab work, autonomous training in data analysis and programming, and stays at international centers such as AMO GmbH and TU Delft. Courses in digital skills and artificial intelligence complete the training, ensuring comprehensive development of the doctoral candidate.

#### Contract conditions:

Indefinite contract for a Postdoctoral Researcher associated to the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (41.000 € - 52.000 €).

**Start of contract: before 31 December 2024**

### PRINCIPAL INVESTIGATOR CONTACT

Email: andres.castellanos@csic.es

Phone: +34 913349070

[momentum@csic.es](mailto:momentum@csic.es) | <https://momentum.csic.es/>



Financiado por  
la Unión Europea  
NextGenerationEU



GOBIERNO DE ESPAÑA  
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES  
MINISTERIO PARA LA TRANSFORMACIÓN DIGITAL Y DE LA FUNCIÓN PÚBLICA

CSIC  
red.es



Plan de Recuperación,  
Transformación  
y Resiliencia

