Doctoral student on novel biosensing technologies based on optics, graphene and porous materials at the Universidad Politécnica de Valencia (UPV, Spain)

We are seeking a highly motivated, curious, and proactive student who is able to work both autonomously and collaboratively, and is willing to contribute to the development of novel biosensing technologies that combine optics, graphene, and porous materials. You will join the Biophotonics Group at the UPV's Nanophotonics Technology Centre (NTC), led by Prof. Jaime García Rupérez.

About the BUG-ID Doctoral Network

This position is part of the BUG-ID Doctoral Network "Biosensors Using Graphene for Infection Diagnostics", which has been funded under the Horizon Europe Marie Skłodowska-Curie Actions (MSCA). The main objective of BUG-ID is the development of graphene-based biosensing technologies for their application on the early and accurate diagnosis of bacterial infections.

You will be part of a network of 15 doctoral students with diverse skills in interdisciplinary research, spanning from nanotechnology and materials science, molecular microbiology, biochemistry, and AI-based data analysis, enrolled in the BUG-ID Consortium, which is formed by several academic and private institutions across Europe.

By engaging in the BUG-ID project, you will collaborate as a team, utilising knowledge from different scientific disciplines and working across sectoral boundaries. Through this experience, the team will receive training that will empower you all to become future leaders in science and innovation.

You can find further information about the BUG-ID Doctoral Network more here.

You can find further information about Marie Skłodowska-Curie Actions here.

What will you do

You will work on the development of optical biosensors in the visible range based on polarization-dependent optical absorption of graphene enhanced by porous materials. The main objective of this work is to obtain a label-free optical biosensor where sensitivity is boosted by the combination of i) the significantly different absorption of TE/TM modes of light by graphene when a small refractive index change is produced (due to the presence of the target analytes), and ii) the introduction of a porous matrix over the graphene-based sensor that will increase the available internal surface to detect a significantly higher number of biorecognition events.

Given the inter- and multidisciplinary focus of the BUG-ID Doctoral Network, you will not only work on the development of the purely optical part of the proposed graphene-based biosensor, but also in other tasks such graphene synthesis, biofunctionalization of the sensor with the selected bioreceptors, integration of technologies for the creation of the final device, microfluidics development, assay procedures implementation, etc.

Your main supervisor will be Prof. Jaime García Rupérez, leader of the Biophotonics group at UPV-NTC. You will also have as co-supervisors Prof. Margarita Apostolova from the 'Roumen Tsanev' Institute of Molecular Biology of the Bulgarian Academy of Sciences and Dr. Nahid Kondori from the Sahlgrenska Hospital associated to the University of Gothenburg.

Who we are looking for

- You must have a finalised master's degree in fields related to the research topic: Telecommunications Engineering, Applied Physics, Optics, Electrical Engineering, etc. Previous experience in optics/photonics, micro-nanofabrication, biosensing, electromagnetic simulation, etc., will be considered an advantage (e.g., as part of BSc/MSc final degree works).
- You should not have a doctoral degree at the time of recruitment.
- You must not have resided or carried out your main activity (work, studies, etc.) in Spain for more than 12 months in the 36 months immediately before the recruitment (MSCA mobility rule).
- Strong skills in the English language (both written and spoken) are a requirement.

Contract terms

- Work contract for three years.
- Gross salary starting on 3.500€/month (42.000€/year), depending on your family status.
- You will enrol in the Telecommunications PhD program from the Universidad Politécnica de Valencia.
- Two secondments are initially considered for this position:
  - A 2-month secondment at Chalmers University of Technology (Sweden) to study the biofunctionalization of graphene with the selected bioreceptors.
  - A 1-month secondment at AMG Technology OOD (Bulgaria) to learn about sensor nanofabrication in the industry.

  Depending on the research progress and needs, additional secondments at the premises of other participants might also be considered.
- Starting date: September 2026

What we offer

- You will be an employee of the UPV for three years and will enjoy all the benefits available to employees, in addition to benefits such as the public health system, subsidised day care, free schools, etc.
  You can find more information about UPV's services for staff here.
- A dynamic and friendly work environment right in the heart of the beautiful and lively city of Valencia.
- Support from UPV for the processing of residence and work permits, if needed.

How to apply

- Applications must be submitted through UPV-NTC's website here, indicating "MSCA-DN BUG-ID" in the "Position" field.
- You must upload a zip file (maximum 25MB) including the following information:
  - Curriculum Vitae, clearly showing the countries where you have lived during the last three years.
  - A 2-page maximum introduction and motivation letter, confirming the fulfilment of the requirements previously indicated in the "Who we are looking for" section.
  - Grades transcripts and diplomas (BSc and MSc)
  - Contact details for three references (previous supervisors, employers, professors, etc.)
  - Any other information you consider useful for the application.
- A selection committee will assess and shortlist the candidates based on the documents received with your application. Only the shortlisted candidates will be interviewed (online) to determine which candidate is best suited to the position.
- Applications will be accepted until 15 February 2026.