Position Offered: PREDOCTORAL RESEARCHER

Project: *Integrated on-chip photonic sensors powered by artificial intelligence and nanostructured metamaterials*

Technological and scientific fields: Sensors / Artificial Intelligence / Nanotechnology

Location: Madrid, Institute of Optics (IO) (https://www.io.csic.es/)

Research Group/PI: Non-linear and nanoscale guided optics (N2GO) / Aitor Villafranca

PROJECT SUMMARY

The main objective of the project is the development of integrated on-chip photonic sensors through the synergistic combination of nanostructured metamaterials and artificial intelligence techniques. More specifically, high-resolution Fourier Transform microspectrometers will be developed by combining waveguides with sub-wavelength nanostructuring and artificial intelligence techniques for the optimization of the functional blocks that make up the spectrometer and for the processing of the data generated by it.

PROFESSIONAL PROFILE

Minimum requirements:

- BsC in physics, telecommunication engineering, electric/electronic engineering or computer engineering (or related topics)
- MsC in photonics (or related topics)

Merits to be considered:

- Knowledge of waveguides
- Knowledge of spectroscopy
- Laboratory experience with optical equipment
- Knowledge of simulation in Lumerical
- Proficiency in Matlab, Python, and Labview

WHAT IS OFFERED

The project includes a training plan of 260 ECTS over the four years. In addition to acquiring technical skills directly related to the project objectives (design, simulation, and characterization of waveguide devices; optimization through artificial intelligence; use of integrated sensors...), the training plan includes acquiring transversal skills for the professional development of the contracted person (industrial transfer, dissemination, networking, leadership with a gender perspective...). The project will be carried out in collaboration with the University of Malaga, where two research stays are planned. Additionally, two international research stays are planned: one at C2N-CNRS (France), and another to be determined between the Royal Institute of Technology (Sweden) or Aristotle University of Thessaloniki (Greece), depending on the project's progress and the training needs of the contracted person. The PI and the hosting group have a strong commitment to gender equality and diversity.

Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

Email: a.villafranca@csic.es

Phone: 915 61 68 00

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