

JOB POSITION

POSTDOCTORAL RESEARCHER on PHOTONIC INTEGRATED CIRCUITS within the framework of the HORIZON project "SYMPHONY"

Description

We are looking for a postdoctoral researcher specialized in photonic integrated circuit (PIC) design, with proven research expertise in subwavelength metamaterials. We offer an inclusive work environment with international collaborations, strong ties with industry and a dedicated focus to the professional development of the hired researcher.

About CSIC, the Institute of Optics and N2GO group

The Spanish National Research Council (CSIC) is the largest public research institution in Spain and one of the most renowned institutions in the European Research Area (ERA). It is affiliated to the Ministry of Science and Innovation through the Secretary General for Research. The Institute of Optics, located in downtown Madrid, is part of CSIC's network of research centres. Our scientific objectives include every aspect of Optics and Photonics, with particular emphasis in areas such as Ophthalmic and Physiological Optics, Image Processing, Optical Radiation Measurements, Light-Matter interaction, Non-linear Dynamics of Optical Systems, Nanophotonics and Optical Communications.

The [N2GO group](#) (Nonlinear & Nanoscale Guided Optics) is a multidisciplinary group combining theoretical and experimental studies of optical waveguides, with particular emphasis in telecommunication and sensing applications of fiber lasers, fiber sensors and PICs. At N2GO, we value diversity and are committed to providing equal employment opportunities and professional growth for everyone, regardless of gender, age, sexual orientation, gender identity, religion, ethnicity, disabilities, or any other personal characteristic protected by law. We believe in building an inclusive and respectful work environment, where each person can develop professionally and contribute fully to our team.

About SYMPHONY project

Air pollution poses a great environmental risk to health, accounting for nearly half a million premature deaths each year in Europe. Biogas production is an enabling technology to achieve net zero emissions, while accelerating the energy diversification in Europe. Both air quality control and biogas production demand critical improvements in sensor technology. European project [SYMPHONY](#), coordinated by CNRS (France), will develop a new technology enabling the implementation of dense networks of cloud-connected, low-cost, portable and easy-to-use PIC sensors, capable of multi-target detection for applications in air quality control, pollution monitoring, industrial process control and safety.

SYMPHONY will address this challenge by making key developments in silicon photonics, neuromorphic circuits, artificial intelligence, integration and packaging, while exploiting state-of-the-art silicon microelectronics for ultra-low power edge computing with AI, and the connected sensor network for spatially-resolved analysis and prediction. Specifically, N2GO's main role within the SYMPHONY project is the development of spectrometer PIC circuitry, based on integrated Fourier transform schemes and high-performance subwavelength metamaterial devices.

Task summary

- PIC design and characterization under the framework of SYMPHONY project, focused on integrated microspectrometers and subwavelength-based building blocks
- Collaboration with international partners
- Communication and dissemination of results
- Participation in project meetings and reporting

Minimum requirements

- BsC in Physics, Engineering or photonics-related discipline.
- Proven experience on PIC design and characterization

Merits to be considered

- Phd in photonics (or related disciplines)
- Experience on PIC-based metamaterials
- Experience on PIC-based spectrometers
- Experience on AI-assisted PIC design
- Proficiency in Matlab and Lumerical software
- Ability to communicate and disseminate scientific results
- Ability to lead research projects and supervise early-stage research staff
- Languages: advanced English & Spanish

Contract conditions

- Gross salary: **38.494,15 €** (subject to official CSIC salary level updates).
- Indefinite contract subject to funding availability of the research line, with the project initially funding the position covering **2 years** (please contact IP for any question on CSIC contracts)
- Estimated start date: **February 2024**.
- Based in downtown Madrid. Flexible remote working.
- Additional funding for travels and training, with a strong commitment to the professional development of the hired researcher.

Instructions for interested professionals

- Selection process will be handled by a committee through CSIC official job bank ([bolsa de trabajo](#)).
- Nevertheless, it is highly recommended to send a CV and motivation letter to project IP Aitor Villafranca (a.villafranca@csic.es), for further information on the role and guidance through the job bank application.
- Please contact before **December 20, 2024**, as job bank candidate applications are complicated and take some time before being active.