

PhD Thesis: "Reconfigurable photonic integrated circuits based on metasurfaces, phase-change materials, and nanoantennas"

REFERENCE
SG/2019

PUBLICATION DATE
22/04/2019

✓ DESCRIPTION

The Nanophotonics Technology Center (NTC) at the Polytechnic University of Valencia (Spain) **offers a three-year PhD position on "Reconfigurable photonic integrated circuits based on metasurfaces, phase-change materials, and nanoantennas"**. The student will be funded by a grant from the prestigious *Santiago Grisolia* program, recently awarded to our group.

The NTC is a reference institute created as a hub for scientific research, development and innovation in the field of advanced photonic nanotechnology and nanoscience, with application to next-generation photonic integrated circuits (PICs), metamaterials, plasmonics, biophotonics, security, sensing, optical processing, and telecommunications. The NTC has unique infrastructures in Spain for the prototyping, manufacturing and characterization of silicon photonic devices, including a 500 m² clean room (class 10-100).

PICs are shaping up as key enabling components in fields such as communications, medicine, biotechnology or aerospace. The development of PICs with dynamically reconfigurable features and functionalities is a hot research area that will be the basis of future high-performance computers, advanced on-chip networks, ultrafast and wide-band optical signal processing, and even lab-on-a-chip devices.

✓ OBJECTIVES

- **The aim of this thesis is to advance the field of reconfigurable PICs by using novel concepts and materials, namely, metasurfaces** (planar nanostructured materials with tailor-made optical properties not found in nature), **phase-change materials** (which exhibit extraordinarily large reconfigurable changes in their optical properties) **and on-chip dielectric nanoantennas** (providing full in-plane control over optical radiation; a concept pioneered by our group, see e.g. *Light Sci. Appl.* **6**, e17053, and *Nature Photon.* **11**, 684).
- **The student will work on the full cycle, from the design (both theoretically and through full-wave electromagnetic simulations), to the fabrication and experimental characterization of the reconfigurable PICs at NTC's labs, acquiring a complete portfolio of skills and knowledge at all these levels.**

✓ YOUR PROFILE

- Applicants should hold a degree in physics, telecom engineering, mathematics, or related fields (obtained after 01/01/2015 from a non-Spanish institution) and cannot hold a PhD degree.
- Excellent marks, as well as experience in photonics (including publications in peer-reviewed international journals), both in general and in relation to the topic of the thesis, will be positively valued.
- Strong skills in English and/or Spanish are an indispensable prerequisite.

✓ CONDITIONS

DURATION

3 years (starting 09/2019)

SALARY

16800€/year + 1600€ for travel/accommodation expenses

✓ APPLICATION

DEADLINE

10/06/2019

DOCUMENTATION

Short CV and motivation letter
Degree/academic record

CONTACT

cargarm2@ntc.upv.es
jobs-ntc@upv.es

This call is public at www.ntc.upv.es