UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

PhD positions in Nonlinear Optics and Nanophotonics

We offer a **full time PhD grant** (4 years - FPI grants from Ministerio de Ciencia, Innovación y Universidades) within the research project **"Enhancement of Nonlinear Interactions in Optical Metasurfaces".**

Starting date: January - February 2025.

Affiliation: **Nonlinear Optics and Lasers Laboratory,** Nonlinear Dynamics, Nonlinear Optics and Lasers (DONLL) research group, Universitat Politècnica de Catalunya, Barcelona, Spain.

Supervision: Profs. Jose Trull & Crina Cojocaru.

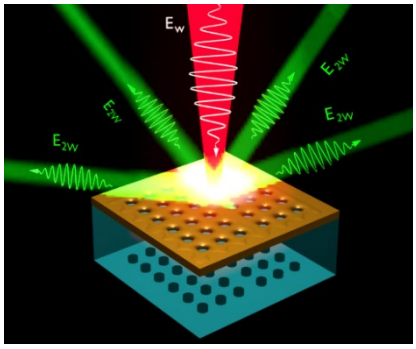
Requirements:

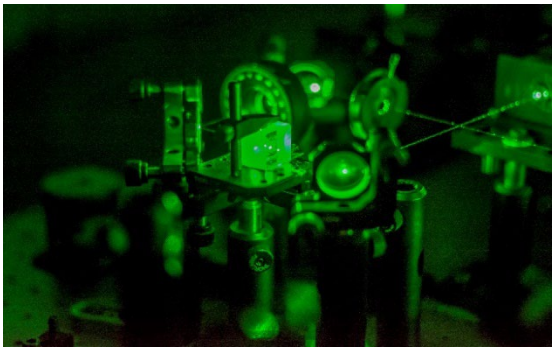
- Bachelor's and master's degree in physics, physical engineering, photonics, electrical and/or electronic engineering, or similar.
- Knowledge of optics, electromagnetism, nonlinear optics, photonics.
- Experimental skills and previous experimental internships and projects will be positively evaluated.
- Basic computational skills.

Application: Interested candidates should send their curriculum vitae and a motivation letter by e-mail to **Profs. Jose Trull** jose.francisco.trull@upc.edu and **Crina Cojocaru** crina.maria.cojocaru@upc.edu. Suitable candidates will be contacted to arrange an online interview to provide more details.

Deadline: November 30th 2024.

Project overview: Experimental and theoretical study of linear and nonlinear light-matter interaction in nano-structured artificial materials (photonic crystals and optical metasurfaces), in a search for new functionalities in Photonics. Some of the physical phenomena involved are the **harmonic generation in opaque region of semiconductors**, **excitation of plasmonic waves** in metals and conductive oxides and **topological surface waves.** The aim is to maximize the potential impact of nonlinear metasurfaces to new nanophotonic devices, such as multiple frequency generators, tunable emitters extended in the UV and optical sensors, all into the interconnected fields of **nanomaterials** and **nonlinear optics.**





The selected candidate will work on the design and measurement of novel nanophotonic structures performing a combination of theoretical and experimental tasks: developing numerical simulations, setting new experimental set-ups and experimentally proving the optical properties of the nanostructures. Occasionally he/she could participate in the sample fabrication through short stays in our collaborator's labs. He/she will participate in our international collaborations having the opportunity to carry out international internships in prestigious research groups in USA, Italy or Australia and will participate in national and international congresses to disseminate his results to the scientific community.

Student will be part of our active research group, being in contact with other PhD students working on different subjects in the fields of nonlinear optics, nonlinear dynamics and lasers, research well recognized at the international level.

We look forward to receiving your application!