Job Description
Doctoral Position

DC15: Multispectral metalenses for 3D imaging.

Doctoral position at photonicSENS, in Valencia, Spain.

Main supervisors: Dr. Arnau Calatayud and Dr. Armin Lenz [photonicSENS]

Co-supervisors/mentors: Prof. Isabelle Staude [JENA] and Prof. Ana Díaz-Rubio [UPV]

Objectives:

- **Design and development of liquid-crystal-based reconfigurable metasurfaces**—including varifocal metalenses, tunable diffractive optical elements (DOEs), and/or spaceplates with dual- or multi-band operation—for integration into advanced 3D imaging systems.
- **Inverse design, numerical optimization, and prototyping of metasurfaces**, using full-wave electromagnetic simulations and gradient-based optimization techniques, followed by fabrication of functional prototypes in close collaboration with academic and industrial partners within the MetaTune consortium.
- **Comprehensive numerical and experimental characterization of metasurfaces and integrated imaging systems**, ranging from individual metasurface elements to multi-metasurface optical architectures, to validate reconfigurability, optical performance, and system-level functionality within a practical 3D camera demonstrator.

This position is part of the MetaTune Doctoral Network "Reconfigurability using inversely designed metasurfaces", which has been funded under the Horizon Europe Marie Skłodowska-Curie Actions (MSCA) program.

Acquire knowledge:

During the thesis, the candidate will acquire practical background in reconfigurable optical metasurfaces, combining inverse design, nanofabrication, and experimental characterization. Through hands-on work on prototype development and system integration, the candidate will gain experience embedding metasurfaces into actual 3D cameras. In parallel, the doctoral training will foster interdisciplinary competencies and transferable skills, including scientific writing and presentation, effective communication within international academic–industrial consortia, and collaborative problem-solving, preparing the candidate for both research and innovation-driven career paths.

Design	Materials	Fabrication	Characterization
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→ Go to the project webpage for more information

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What METATUNE Offers:

- Gross salary starting at 3.320€/month (39.840€/year, paid in 12 monthly instalments), with the potential for additional funding depending on your family status.
- Work contract at photonicSENS for 36 months funded through the MSCA network, with the additional benefits for employees (public and universal health system, free schools, etc.).
- Three research stays, two 4-month at Danmarks Tekniske Universitet and Friedrich-Schiller-Universität Jena and one 3-month at the Polytechnic University of Valencia.
- Opportunity to pursue a PhD degree awarded by the Universitat Politècnica de València, a leading European university, in the framework of a collaborative and international MSCA doctoral network.
- Training program including research-specific and transferable skills courses.
- Active participation in workshops, conferences, and network-wide events to build professional and scientific connections.
- Stimulating, multidisciplinary, and international research environment within a prestigious European training network.

Starting date: November-December 2026.

Deadline for online application: May 31, 2026 (but candidates are encouraged to apply as soon as possible).

Mandatory Requirements:

- You must have a finalised **master's degree** in fields related to the research topic: Telecommunications Engineering, Applied Physics, Optics, Electrical Engineering, Material Engineering.
- 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 (this is a requirement from the funding authority).
- Strong skills in the **English** language.

Desired skills and knowledge:

- Background in metasurfaces, including theoretical understanding and/or experience in design, simulation, fabrication, or experimental characterization.
- Experience in optics, with a focus on imaging systems and experimental optical characterization techniques.
- Proficiency in one or more programming languages commonly used for scientific computing and data analysis (e.g., Python, MATLAB).
- Familiarity with version control systems, preferably Git.
- Working knowledge of Spanish is considered an asset.

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