

PhD POSITION

Research Group of Applied Optics and Image Processing Universitat Politècnica de Catalunya-BarcelonaTECH Spain



The Research Group of Applied Optics and Image Processing of the Polytechnics University of Catalonia BarcelonaTECH (Spain) offers a contract position to develop a PhD thesis in the project: *Presbyopia-correcting optical intraocular implants for personalised visual outcomes (PID2020-114582RB-I00)*.

The PhD position is associated to a competitive grant or scholarship announced by the Agencia Estatal de Investigación (AEI, Spanish government) in the call “Ayudas para contratos predoctorales para la formación de doctores 2021” (Grants for predoctoral contracts for doctoral training and education – 2021).

Status: **OPEN, from 28-October-2021 to 11-November-2021**

Call: Agencia Estatal de Investigación / Convocatorias

<http://www.aei.gob.es/portal/site/MICINN/menuitem.dbc68b34d11ccbd5d52ffeb801432ea0/?vgnextoid=4c6c68d98570c710VqnVCM1000001d04140aRCRD>

Project ref. PID2020-114582RB-I00.

Project Leader: Prof. María S. Millán

Group of Applied Optics & Image Processing (publications and activity): <https://futur.upc.edu/GOAPI>

Requirements

BSc in Physics or Physics Engineering. Other profiles (Engineering, Optometry, ...) can be considered.

MSc in Optics, Photonics, Optical Engineering, Visual Science, or related disciplines.

The admission in a Doctorate Program of UPC* is necessary prior to formalize the PhD contract.

Highly motivated for experimental work in an optical laboratory and applied optics research in connection with visual science and visual health.

Programming and computer simulation skills: C++, Matlab, Python, ...

Fluent English, spoken and written.

(*) PhD program access requirements

<https://doctorat.upc.edu/en/future-doctoral-candidates/access-and-admission>

Contact

Send Curriculum Vitae and brief motivation letter to:

Professor María S. Millán, m.millan@upc.edu

Project motivation (general)

More than one fifth (20.3%) of the European population (19.4% in Spain) was aged 65 and over (2019 data). Most of this population requires intraocular lens (IOL) implants to compensate for the effects of their ocular lens ageing: presbyopia (disability to focus on objects placed at a near distance) and cataract (loss of transparency). The project “*Presbyopia-correcting optical intraocular implants for personalised visual outcomes*” aims to measure some objective and subjective aspects of presbyopia-correcting IOL quality, for a better knowledge of IOL performance and preoperative IOL-to-patient matching. It also aims to physically simulate new optical IOL designs in a custom-developed optical system as a prior stage to manufacture. Overall, this project combines optical and clinical assessment methods with the development of new techniques, procedures, systems and interpretations that lead to a clinically relevant insight of presbyopia-correcting IOLs.

PhD objective: To investigate presbyopia-correcting IOLs with emphasis on their optical design, optical image quality testing and correlation with postoperative outcomes obtained through visual quality examination. The research covers theoretical, simulation, and experimental work in optical laboratory. The selected candidate will further contribute to create/modify new IOL designs and physically simulate them by means of optical systems developed on purpose.

Location

Group of Applied Optics & Image Processing,

Faculty of Optics and Optometry, Universitat Politècnica de Catalunya (UPC) - BarcelonaTech

Violinista Vellsolà, 37. 08222-Terrassa (Barcelona) Spain.

Estimated starting data: December 2021-first month 2022, depending on the selection process.