

Post docs and PhD research positions at Prof. Pablo Artal's Optics Laboratory in Murcia University, Spain, within the SEECAT-advanced grant of the European Research Council

SEECAT ("Seeing through cataracts with advanced photonics") project summary:

Cataract is the opacification of the crystalline lens of the human eye.

It is usually related with age and is one of the leading causes of blindness. The increase in light scatter in the lens reduces the contrast in the retinal images severely degrading vision. The current solution is to perform surgery to remove the natural lens that is substituted by an artificial intraocular lens. This is a successful procedure restoring good quality of vision in most patients. However, in many situations it would be incredible advantageous to actually "see" through a cataractous eye. The optics of the eye is affected by two factors: aberrations and scatter. In the last decade, correcting optical aberrations in the eye was accomplished by using adaptive optics techniques.

This permitted to obtain high resolution images of the retina and also to improve vision.

Within this project, spatial and temporal advanced photonics techniques for imaging through the turbid media of the cataractous eye will be used. We envision two direct applications of this technology: a dedicated fundus camera to register images of the retina in patients affected by cataracts and a novel type of opto-electronics spectacles restoring some vision in cataract patients.

Required qualifications and experience:

Post-doc:

- PhD degree in optics, physics, electrical engineering or related topic.
- Previous work experience in experimental optics and photonics, especially in imaging through turbulent media or biological materials will be an asset.
- Spanish language NOT required.

PhD students:

- MSc degree in optics, physics, electrical engineering or related topic.
- Interest in applied optics for biomedicine.
- Spanish language NOT required.

Job conditions:

- Salary will be within the University of Murcia scale, including social security and institutional benefits.
- Starting date: Spring-Summer 2014.
- Duration: Two (postdocs) and Four (PhD students) years.

Information on the research activities of the Artal's optics lab can be obtained through the web page: <http://lo.um.es>; and on Murcia (Murcia is the Region capital city located in the south-est of Spain, 40 km from the Mediterranean Sea) from the University of Murcia web page:

<http://www.um.es/english/general-inf.php>. The weather in Murcia is good year round and the area offers plenty of outdoor and cultural recreations opportunities.

Interested candidates should submit the application electronically, including cover letter, CV, list of references, a summary of your MSc (or

PhD) thesis and one motivation page stating your interest in the project to Prof. Pablo Artal ([pablo@um.es](mailto:pablo@um.es)), indicating in the subject the reference:

SEECAT PhD position.

The search for adequate candidates will be open until the position is filled.