



GOBIERNO
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DE EDUCACIÓN, CULTURA
Y DEPORTE

UIMP
Universidad Internacional
Menéndez Pelayo

International School on Light
Sciences and Technologies ISLiST
June 17-21, 2019, Santander, Spain



Prof. Susana Marcos

Director

of Visual Optics and
Biophotonics Lab, Instituto
de Optica,
Professor of Research, CSIC,
Madrid, Spain

June 17, 2019
12:10 h
Invited talk

**Light in the Diagnostics and
therapy of the Vision human
system**

The eye projects images of the outside world onto the retina, where photoreceptors transform light into electrical signals that are transmitted to the brain. However, several ocular conditions such as myopia, presbyopia, corneal pathology) that degrade the quality of the retinal images affect billions of people who require from optical aids or treatments. In this lecture I will present how optical and photonic technologies allow us to better understand, quantify and diagnose ocular disease, as well as new optical and light-based therapies for treatment. The talk will shed light into new directions for treating and controlling myopia, restoring accommodation in the presbyopia or halting sight-threatening corneal disease.

Prof. Marcos is a Professor of Research at the Institute of Optics (CSIC) where she leads the Visual Optics and Biophotonics Laboratory. She is Director-at-Large of the Optical Society of America (OSA), and editor of the OSA journal Optica. She is the recipient of the Adolph Lomb Medal (OSA), European Young Investigator Award ICO Prize (International Commission for Optics), Doctor Honoris Causa by the Ukrainian Academy of Science and Technology, Physics, Technology and Innovation Award (Royal Society of Physics-Fundación BBVA), and the ARI Award (Alcon Research Institute), among others. She is also a European Research Council Advanced Grantee. She is an elected Fellow of the European Optical Society, Optical Society of America and Association for Vision in Research and Ophthalmology. She is an author of >150 publications, inventor in 15 patents, partner of spin-off Plenoptika Inc and co-founder of 2Eyes Vision.



**Prof. José Miguel
López-Higuera**

Head

Photonic Engineering
Group of University of
Cantabria, CIBER-BBN and
IDIVAL, Spain

June 17 / 15:30 h
Invited Talk

Moderator of
Round Tables I & II

**Light on Sources, Health and
Medicine**

Photonics is considered a Key Enabling Technology (KET) or an Essential Technology for the development of Europe, USA and others main nations around the world. Photonic Sensing is understood as any sensing approach that employs light sciences and technologies and it is becoming an area with very substantial expectations of annual growths and with strong socio-economic impacts in the first decades of this XXI century.

In the talk, after a mention of what it must be understood, in wide sense, as the general and comprehensive concept Light Sciences and Technologies, we will do a "flight" over several significant examples of light use on a wide number cases inside the Sources, Health and Medicine applications. The trends for the near future will be also addressed and discussed.

Prof. López-Higuera is the founder and head of the Photonics Engineering Group of the University of Cantabria, CIBER-BBN of Institute of Health Carlos III and IDIVAL of Hospital Universitario Marqués de Valdecilla, Spain. He is a Member of a wide set of international Committees of Conferences, R&D Institutions, and Companies in the area of photonic sensing. His work is focused on optical sensor systems and instrumentations for any sector application. He has worked in a wide range of R&D&i projects, acting in more than 90 of them as manager.

He has contributed with more than 700 research publications including 20 patents closely related to optical and fiber techniques for sensors and instrumentations. He has worked as an editor and co-author of four R&D international books, as a co-editor of several conference proceedings and Journals and he has been the director of 17 PhD theses. He is co-founder of three technology-based companies.

Prof. López-Higuera is a Fellow of OSA, Fellow of SPIE, Senior of IEEE and a Member of the Royal Academy of Medicine of Cantabria.