

Keynote Speech 4

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Title: Paths for Optical Sensing

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Abstract: Optical sensing has for long been associated with leading-edge performance and recent developments indicate this trend will continue. Progresses both at the level of well-established optical technologies and on the uncovered of fundamental optical science with direct impact on sensing and measurement justifies such statement. Here it is presented a glimpse of those progresses, assessing in particular their impact when the sensing platform is the optical fiber. It starts with the identification of the main features of optical sensing and the characteristics that positively differentiate this sensing technology comparatively with others, particularly those that are electrical based. Then, it is emphasized the potential of the combination plasmonics and optical sensing, mainly when it is enhanced by the immense range of possibilities opened through the access to the metamaterials world. The final section delivers some inputs on the fascinating new world of optical sensing in the realm of quantum mechanics, where truly qualitatively novel possibilities for measurement and sensing stand for discovery.



José Luís Santos received his graduation in Physics from University of Porto, Portugal, and Ph.D. degree from the same University, benefiting from collaboration with the University of Kent at Canterbury, UK.

He is currently a Professor of Physics at the Physics and Astronomy Department of Faculty of Sciences of University of Porto, Portugal.

Optical fiber sensing is the main area of his research, with focus on interferometric and wavelength encoded devices. He is author or co-author of more than 230 scientific articles and co-author of 5 patents. With Professor Faramarz Farahi of University of North Carolina was Editor of Handbook of Optical Sensors, CRC Press 2014.