

MASTER IN PHOTONICS – PHOTONICS BCN EUROPHOTONICS-POESII MASTER COURSE

PROPOSAL FOR A MASTER THESIS

Dates: April - September 2017

Laboratory: Optoelectronics
Institution: ICFO-The Institute of Photonic Sciences
City, Country: Castelldefels

Title of the master thesis: Nano-structured optical surface for self-cleaning, antifingerprint and antimicrobial display screens

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Summary of the subject (maximum 1 page) :

The synthesis of new materials and the advances in controlling fabrication processes at the nanoscale are the basis for the development of new designs and added functionalities in photonic devices. Despite the intensive academic research in nano-photonics and the demonstration of its potentials in various fields, significant effort is still needed to fully exploit it at industrial level. In particular an essential feature for mass production of devices is to find reliable techniques, other than e-beam lithography and focused ion beam milling, that allow precise nanostructuring of large surfaces at low cost.

The research will focus on developing optical surfaces and interfaces with unprecedented properties by using advanced concepts and nano-fabrication techniques scalable at industrial level. More specifically application in the bio and medical areas will be targeted. These include but are not limited to antifingerprint surfaces for displays, surface enhanced optical detection of chemical and biomolecular specie and antimicrobial, in particular antiviral and antibacterial, surfaces.

Keywords: Optical surfaces, nano-structures, antimicrobial, antifingerprint