

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: Sensing of particles, micro-organisms and biomarkers using the camera of a mobile phone

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Summary of the subject (maximum 1 page) :

By exploiting full field of view CMOS or CCD image sensor array (ISA) at the highest resolution, the student should contribute to design and develop low cost and portable devices for measuring light scattering, reading biomarker microarrays, as well as detecting and counting microorganisms, cells and particles. In addition to CMOS-ISA, the devices are made of other off-the-shelf components, including a light emitting diode (LED) source, and are based on proprietary geometries that allow the processing of large sample areas or volumes.

The applications of the technology are numerous, from bedside diagnostics to quality control of pharmaceutical powders and testing of drinking water sources in areas lacking accessibility to laboratory infrastructures.

Keywords: Image sensors, water analysis, biomarker detection, particle analysis