# PHOTONICS - EUROPHOTONICS MASTER COURSE

## PROPOSAL FOR A MASTER THESIS

**Course 2014 –2015**

**Laboratory : ICFO - Optoelectronics Group**
**City, Country : Castelledefels, Spain**

**Title of the master thesis : Nano-structured optical surface for biological and medical applications**

**Name of the tutor of the master thesis: Valerio Pruneri**
Email address : Valerio.pruneri@icfo.es
Phone number : +34 93 553 4052
Mail address : ICFO

**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 surface enhanced optical detection of chemical and biomolecular specie and antimicrobial, in particular antivirus and antibacterial, surfaces.

The trainee will closely work with researchers and PhD students of the Optoelectronics group at ICFO:
http://www.icfo.es/index.php?section=people0&lang=english&op=show_card&people_id=168&nick=Valerio Pruneri

**Keywords :**

**Additional information :**
* Amount of the monthly allowance (if it is the case): to be defined

* Required skills : applied research, industrial project skills, knowledge in materials science and biology
* Miscellaneous :