



MASTER IN PHOTONICS – PHOTONICS BCN EUROPHOTONICS-POESII MASTER COURSE

PROPOSAL FOR A MASTER THESIS

Dates: April - September 2017

Laboratory : Transductores Químicos

Institution: Instituto de Microelectrónica de Barcelona (IMB-CNM, CSIC)

City, Country: Bellaterra (Barcelona), Spain

Title of the master thesis: Light-actuated microfluidics.

Name of the master thesis supervisor: María Díaz González/Antoni Baldi

Email address : maria.diaz@imb-cnm.csic.es

Phone number : +34 93 594 77 00

Mail address : IMB-CNM (CSIC), Campus UAB, 08193, Bellaterra, Barcelona (SPAIN)

Summary of the subject (maximum 1 page): One of the main challenges to address for the successful miniaturization and commercialization of lab-on-a-chip devices is the development of reliable fluid handling elements such as micropumps and microvalves. Although a great variety of microvalves and micropumps can be found in the literature, most of them require an expensive, bulky and energy consuming instrumentation for their actuation.

The aim of this MSc thesis is the development of light-actuated wax micropumps and microvalves suitable for mass production of low-cost, fully-integrated lab-on-a-chip devices. The master student will contribute to the design, fabrication and evaluation of these fluidic components. The final goal is to have fully integrated optical microfluidic system for sensing applications.

Keywords: photo-actuation, microvalve, micropump, optical lab-on-chip devices.

Additional information :

* Required skills : Graphic design software (CorelDRAW) skills will be appreciated.

* Miscellaneous :