



Education and Culture DG

ERASMUS MUNDUS



EUROPHOTONICS-POESII MASTER COURSE

PROPOSAL FOR A MASTER THESIS

Dates: April 1st, 2016 – September 30th, 2016

Laboratory : GOAPI - Applied Optics and Image Processing Group
City, Country : Terrassa (Spain)

Title of the master thesis: Phase patterns for Intraocular lenses (IOLs) displayed on LCoS device

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Summary of the subject (maximum 1 page): Liquid crystal on Silicon (LCoS) displays are versatile devices that permit real-time and computer-controlled update of phase distributions being displayed on these screens. LCoS spatial light modulators (SLM) are electronically addressed devices that also allow the simultaneous multiplexing of different phase patterns to display various optical diffraction elements in a single phase distribution. These features are particularly attractive for easily implementing and testing specific phase patterns, such as the ones describing new designs for modern intraocular lenses, on an optical bench. To fully achieve this goal, taking advantage of the maximum capabilities of the SLM, a calibration of the LCoS device is necessary. The display response under different illuminating wavelengths, and its control through the available software parameters must be monitored in order to achieve the screen best performance. This previous analysis will permit the optical implementation, quality analysis and comparison of different prototypes of modern intraocular lenses.

The student will work on a well-equipped optical laboratory, carrying out optical experiments with direct application to the currently very active research field of IOL design and analysis.

Keywords : Intraocular lens, LCoS displays, Phase compensation, SLM calibration, optoelectronic device

Additional information :

* Required skills :

Motivated student for experimental work. Knowledge of vision science appreciated.

* Miscellaneous :