MASTER IN PHOTONICS – "PHOTONICS BCN"
ERASMUS+ "EUROPHOTONICS-POESII"

Laboratory: Optoelectronics
Institution: ICFO
City, Country: Barcelona, Spain

Title of the master thesis: Low cost and compact particle size analyser for industrial applications

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Keywords: CMOS, particle size analyser, programming, particle size distribution

Summary of the subject (maximum 1 page):

The knowledge of particle size is important in many industries. For example, in pharmaceutical industry the size determines absorption or dissolution rate, suspension stability, effectiveness of drug delivery, in food industry the size affects the flavor and texture, appearance and processability. Therefore, particle size distribution (PSD) data for different materials are important in controlling the product quality and help manufacturers to comply with industry standards and regulations. The PSD can be obtained from the scattering signature of the particles which in turn can be measured using laser diffraction technique. The commercially available devices based on laser diffraction are very expensive and large, which limit their integration in different industrial production lines. This project is about developing a compact and low cost particle size analyser that enables non-destructive and online sample analysis.

The goal of this master-/ or project-thesis is to develop a particle size analyser including a PSD calculation algorithm and to verify the system on different standard samples. The project could include the following parts:
• Further development of the existing system
• Development and implementation of the PSD calculation software

The exact project can be adapted to the interest of the student and his availability.