ICT PHD

Research project for a PhD curriculum in ICT – Industrial Applications of ICT

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**Proposed Title of the research:**

Photonic Technologies for real time monitoring of product quality in manufacturing and agri-food industry

**Keywords: (5)**

Photonics, Optical sensing, Optical sorting

**Research objectives: --(max 10 rows)**

Industry 4.0 paradigm provide that the industrial process is continuously monitored and supervised by sensor systems that allow real-time control of the effectiveness of the production process in all its steps and product quality. A key element in this transformation process is the availability of new sensors able to monitoring new chemical-physical parameters or guarantee sensitivity levels not offered by existing technologies. In this context, the present project aims to develop innovative sensors based on optical technologies able to monitor the quality of products in real time and through non-destructive techniques.

**Proposed research activity -- (max 10 rows)**

The aim of the project is to develop innovative sensors based on optical technologies for real-time non-destructive product quality monitoring. The sensors will be based on innovative sources, light detection techniques and diagnostic algorithms. The use of these sensors will allow real time monitoring of production systems with a consequent increase in the quality of products, reduction of waste and allowing cost containment and an increase in productivity and added value.

**Supporting research projects (and Department)**

The research activity will be carried on in the framework of a collaboration between PhEm lab group of the Department of Engineering “Enzo Ferrari” and DNA Phone srl, an innovative start-up company with expertise in creating optoelectronic devices for portable diagnostic. (http://www.dnaphone.it/en)

**Possible connections with research groups, companies, universities.**

University of Parma (It), DNA Phone, RayTec Vision s.p.a.

 (\*) optional

(\*\*) optional/to be completed on the second year