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Laser and ultrasound for accurate and timely diagnosis of thyroid nodules

The Politecnico di Milano has participated in the LUCA project of Horizon 2020

Milan, 23rd June 2016 - **An innovative, low-cost technology for more accurate screening of thyroid nodules that will help doctors to make better diagnoses and thus allow drastically reducing the number of unnecessary surgeries, significantly improving the quality of life of patients:** this is **LUCA** (Laser and Ultrasound CO-analyzer for Thyroid Nodules), the European project that started in February which involves researchers of the Politecnico di Milano together with those of the Institut d'Investigacions Biomèdiques August Pi i Sunyer of Barcelona, the University of Birmingham, the European Institute for Biomedical Imaging Research of Vienna, and some French companies (Vernon and Echo Control Medical) and Spanish companies (Hemophotonics) coordinated by the Institute of Photonic Sciences (ICFO) of Barcelona. The project received funding of €3,628,845.75 for four years, within the Horizon2020 program.

About three hundred thousand new cases of thyroid cancer are diagnosed worldwide each year. The techniques currently used to screen this type of tumour do not provide surgeons with enough information to undertake the most appropriate action plan involving a significant number of surgeries that are sometimes unnecessary.

The LUCA tool aims to overcome these shortcomings by helping to distinguish whether the suspicious lump requires further more invasive investigations or not, combining to the classic ultrasound two photonic systems: an optical system to measure blood flow based on the Diffuse Correlation Spectroscopy and an optical system to characterize the compositions of the nodule based on the Time Resolved Near Infrared Spectroscopy.

The Politecnico di Milano has a leading role in this ambitious project as it will develop the tool for the non-invasive characterization of thyroid nodules by using advanced photonic techniques. In addition, the Milan university is in charge of the validation of the entire LUCA tool at its research infrastructure: these lab tests will help verify the suitability of the tool for the implementation of the clinical phase of the project. The departments involved are the Department of Physics and the Department

of Electronics, Information and Bioengineering, whose activities for the LUCA project are coordinated by Davide Contini and Alberto Tosi.

"This important result is the consequence of decades of research that sees the Politecnico di Milano at levels of excellence in the international scene in the development of photonic techniques for health", says the Polimi research group.

For further information:

<http://www.luca-project.eu/>

<https://www.youtube.com/watch?v=GeVQSOMzJ4U&feature=youtu.be>



PHOTONICS PUBLIC PRIVATE PARTNERSHIP

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 688303 and is an initiative of the Photonics Public Private Partnership (www.photonics21.org).