



# ESR 6 Information Sheet

**Project title:** Time-gated diffuse optical spectroscopy for deep tissue diagnostics.

**Host institution/company:** Politecnico di Milano (Italy).

## Supervisors

- *Academic:* Prof. Antonio Pifferi, Group of Diffuse Optical Spectroscopy, Department of Physics, Politecnico di Milano.
- *Industrial:* Dr. Johannes Swartling, Spectracure AB.

**Type of contract:** 36-months full-time research grant within the PHAST-ETN project.

**Brief description of the project:** The group at Politecnico di Milano has long-lasting expertise in time-domain Diffuse Optical Spectroscopy (DOS) to retrieve functional (e.g. brain and muscle activation), chemical (e.g. tissue composition) or structural information from the human body non-invasively studying photon random paths through the tissues. The ESR project will extend the range of applicability of the technique to encompass also single fibre interstitial spectroscopy or non-contact fibre-less imaging exploiting the unique competences and instrumentation developed by the research team on time-resolved approaches (ps resolution) at single-photon level. The ESR activity will include development of photonics devices, validation on tissue mimicking phantoms and realistic specimens, devise of novel methods for quantification, foresight of new applicative fields.

Planned secondments at **Fondazione Links** (Italy), **ICFO** (Spain), **Spectracure AB** (Sweden) and **Tyndall Institute** (Ireland).

## Qualifications

### *Essential*

- Applicants should hold or expect to attain, as a minimum an MSc in Electronics, Optical Engineering or Photonics, Physics, Bioengineering or related area.

## Knowledge and Experience

### *Essential*

- A demonstrated knowledge of at least two of the following: photonics, electromagnetic fields, optical sensing, spectroscopy, lasers, optical fibers, bioengineering, data analysis or control of instrumentation.

### *Desirable*

- Research project carried out in at least one of the above disciplines.

## Skills and Competencies

### *Essential*

- Applicants whose first language is not English must submit evidence of competency in English, please see Politecnico di Milano language skills required to be enrolled in a PhD Course.
- Evidence of interest, aptitude and research experience in the above disciplines.

## Further information

For any informal queries, please contact Prof. Antonio Pifferi by email at [antonio.pifferi@polimi.it](mailto:antonio.pifferi@polimi.it).