

DC 5: Development and characterisation of a general-purpose time-resolved fluorescence imaging system.



Project Description: Fluorescence imaging is a fundamental tool for clinical application. In particular, a multidimensional data set (spectrum, time, space) allows to improve the information capability and, hence, its diagnostic purpose. The objective of the work is to design, develop and validate a fast multispectral time-resolved imaging system based on a computational imaging approach. The system will exploit novel acquisition and processing methods and their integration within the system. The candidate will collaborate with DC6 for integrating and testing the developed computational architectures on experimental system, and with DC4 for the clinical strategies.

Expected Results: Investigation of novel spatially- and temporally- resolved multispectral imaging acquisition & processing methods for advanced (realtime & quantitative) fluorescence imaging. Design and fabrication of a multispectral time-resolved imaging system combined with spatial modulation for both illumination and detection. Performance testing of methods and systems for advanced fluorescence imaging with dedicated diffused and fluorescent phantoms. Work will be performed jointly with DC4 and DC11.

Requirements

- Master-equivalent degree in fields of science or engineering related to optics or photonics. The degree must be completed by the start of the PhD.
- Good programming skills in commonly used languages (e.g. Matlab, Python, C/C++, LabView).
- Ability to work both independently and in a team.
- Previous research experiences are positively evaluated.
- English fluency* (Both written and oral). English fluency can be demonstrated by providing evidence of any of the following: TOEFL (CBT) – >= 210; TOEFL (iBT) – >= 78; TOEFL (PBT) – >= 547; TOEFL (ITP®) – >= 543; TOEIC – >= 720; IELTS – >= 6; Trinity College London – >= ISE II.

*Exceptions for native speakers and applicants having completed a prior cycle of studies in English apply. [Click here to learn more about your specific requirements!](#)

Host Institution: POLIMI (Milan, Italy)

Supervisor: Prof. Cosimo D'Andrea

Estimated gross allowance: 38,217 €/year

PhD awarding institution: POLIMI

Secondment 1

Partner: UCL
Supervisor: Prof. Simon Arridge

Secondment 2

Partner: INTUITIVE
Supervisor: Prof. Sylvain Gioux

Secondment 3

Partner: IRCAD
Supervisor: Dr. Michele Diana

Planned Starting Date: 01/11/2023 **Application Deadline:** 15/05/2023

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