

ESR 11 Information Sheet

Project title: Towards multifunctional multimaterial optical fibres for diagnostic and treatment.

Host institution/company: Fondazione LINKS (Italy).

Supervisors

- *Academic:* Davide Janner, Materials for photonics and sensing group, Politecnico di Torino (Italy).
- *Industrial:* Dr. Nadia Boetti, Photonics and Wireless solutions group, Fondazione LINKS (Italy); Dr. Udo Weigel, Hemophotonics (Spain).

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

Brief description of the project:

The group of Politecnico di Torino and Fondazione Links has a long-lasting expertise on design, fabrication and characterization of optical glasses and specialty optical fibers. The group has also developed a bioresorbable optical glass that allow to exploit novel applications in therapy and diagnostics by using resorbable/disposable devices that do not need explant after use.

The ESR will work on the development of an optical probe able to combine several functionalities in the field of cancer diagnostic and treatment, thanks also to the integration, directly into the fiber, of materials which are traditionally not used in fiber optics. Functionalities like in-situ drug release, light delivery for treatment (e.g. photodynamic therapy, photothermal therapy), electrical signal transport (e.g. RF ablation and sensing) and diagnostics (e.g. time-domain diffuse optical spectroscopy) are foreseen. The endoscope will integrate also sensing and monitoring functions that could assist during therapy and after treatment.

Planned secondments at **Spectracure AB** (Sweden), **Leibniz Institute of Photonic Technology** (Germany), **Hemophotonics SL** (Spain), **ICFO** (Spain).

Qualifications

Essential

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

Knowledge and Experience

Essential

- A demonstrated knowledge of at least one of the following: materials for photonics, optical glasses, optical fibers, photonics, spectroscopy, lasers, optical sensing, bioengineering.

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 Torino 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. Nadia Boetti by email at nadia.boetti@linksfoundation or prof. Davide Janner at davide.janner@polito.it.

POLITECNICO di TORINO REQUIREMENTS FOR PhD CANDIDATES

ADMISSION REQUIREMENTS

Master's Degree recognized valid by PoliTo Doctoral School	<p>M.Sc. degree (i.e. 2° level title, as defined by the Bologna Process), issued by an officially recognized academic institution, which grants admission in PhD programmes in the country of issuance.</p> <p>In order to evaluate the University career, the candidate should provide: Master's Degree and transcript of records of the Master's Degree, Bachelor's Degree and transcript of records of the Bachelor's Degree.</p> <p>The documents shall be issued by the relevant university in one of the following languages: Italian, English, French, Portuguese or Spanish</p> <p><u>To be verified by PoliTo Doctoral School before the interviews.</u></p> <p>The original diploma and transcript should be available by 31st October at the latest</p>
GRE® General Test	Valid GRE certificate to present by the 31 st October
English language certificate	<p>One of the following certificates of English language knowledge, regardless of the date of obtainment:</p> <ul style="list-style-type: none">- IELTS with a minimum score of 5.0;- one of the language certificates recognized equivalent to IELTS 5.0 by the Foreign Languages Centre and detained in the table published at the webpage: https://didattica.polito.it/zxd/b5eda0a74558a342cf659187f06f746f/9dde3c1deee7c791026d6a0ac91322bb/815f4c1f644cb627e050c0828c371966?1549616887585 <p>Or a declaration of having a Ba. and/or M.Sc. degree issued by a University in which courses are taught in English, i.e. "The medium of instruction was English".</p>

PhD REGULATIONS

Start date: 1st November

The candidate should complete the enrolment procedure by 31st October.

For specific requirements of the Project the fellowship may start from the 1st May but the PhD starts on 1st November and finishes after 36 months (counted from 1st November).

Length of the PhD Programme: 3 years (from 1st November 20XX to 31st October 20XX) + **procedure for the final exam** detailed:

https://didattica.polito.it/zxd/cms_data/attachment/30/Modalit%C3%A0%20operative_esame%20finale_ENG.pdf

Minimum stay at Polito in presence: 18 months

Minimum Requirements for getting the PhD title (valid for the academic year 2020/2021):

100 hours of hard skills courses

40 hours of hard skills courses

1 publication

1 Italian exam level A1

Positive evaluation by the Academic Board at the end of each year

According to the PhD Programme these requirements may be increased.

For further details:

https://didattica.polito.it/zxd/cms_data/attachment/30/PhD%20Activities%20Indicator%20Scheme.pdf

<http://dottorato.polito.it/en/legislation>

Taxes to be paid

Around € 1.260,00/year for the entire duration of the PhD Program without possibility of exemption