



PhD in FISICA / PHYSICS - 38th cycle

THEMATIC Research Field: NON-LINEAR OPTICAL PROPERTIES OF ORGANIC AND HYBRID MATERIALS

Monthly net income of PhDscholarship (max 36 months)

€ 1195.5

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

This fellowship will be in the context of the iPHOQS project, a large-scale Italian Research Infrastructure in the field of photonics and quantum science. One of the goals of iPHOQS is to develop a set of experimental apparatuses for multi-scale, multidimensional time-resolved optical spectroscopy, with a worldwide unique combination of capabilities, such as temporal resolution, sensitivity, temporal and spectral coverage, excitation frequency resolution and spatio-temporal resolution. The scholar will develop a workstation for the advanced characterization of the nonlinear and non-equilibrium optical properties of organic, quantum confined and nanostructured materials for optoelectronics and photonics applications.

Methods and techniques that will be developed and used to carry out the research

The scholar will develop a setup for Z-scan spectroscopy using tunable ultrashort excitation pulses which will be used to measure the complex third-order optical nonlinearity of photoactive materials. The nonlinear response will be characterized in a wide range of energies, from UV (about 400 nm) to infrared (about 10 mm) thanks to the employment of optical parametric amplifiers. The fellow will also develop a setup to characterize the amplified spontaneous emission of optical materials using the variable stripe method and test their suitability for laser action.

Educational objectives

The scholar will receive a multidisciplinary training in topics including condensed matter physics, nonlinear



	optics, and ultrafast spectroscopy. He/she will have the opportunity to visit partner laboratories in the iPHOQS project.
Job opportunities	Due to the multidisciplinary training in cutting edge techniques of optics and photonics as well as solid-state physics and nanoscience, the scholar will have excellent job opportunities in high-tech industries. In addition, he/she will be well positioned for an academic career.
Composition of the research group	1 Full Professors 3 Associated Professors 2 Assistant Professors 5 PhD Students
Name of the research directors	Guglielmo Lanzani; Francesco Scotognella

Contacts	
<p>guglielmo.lanzani@polimi.it +39-02-2399 9872 https://www.fisi.polimi.it/en/people/lanzani francesco.scotognella@polimi.it +39-02-2399 6056 https://www.fisi.polimi.it/en/people/scotognella</p>	

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	597.75 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information	
<p>Educational activities Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per 3 years: max 4.872,90 euros.</p>	



Teaching assistantship:

There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

Computer availability: individual use

Desk availability: shared use