# PhD position at the Institute of Physical Chemistry-CSIC (Madrid)

The Lasers, Nanostructures and Materials Processing Group (https://lanamap.iqf.csic.es/) at the Instituto de Química Física Blas Cabrera, Consejo Superior de Investigaciones Cientificas (CSIC), in Madrid, invites applications for a PhD position within the collaborative MATRIX project (Matter in Action with Ultrafast Optical and X-ray Lasers) funded by the Comunidad de Madrid (Spain).

## The MATRIX project

The MATRIX consortium "Matter in Action with Optical and X-ray Lasers" aims to develop and implement advanced ultrafast, optical, and X-ray laser methodologies and technologies through collaborative research among seven groups in the Community of Madrid and with major European and international facilities.

## The PhD thesis project

We are seeking a highly motivated candidate with a Master's degree (or equivalent) in Physics, Chemistry, or a related field. The PhD project will focus on the use of advanced laser methodologies for the study of dynamics in molecules and condensed systems. The PhD candidate will participate in the development of advanced coherent light sources and part of his/her work will include the construction of a tunable vacuum ultraviolet/extreme ultraviolet (VUV/XUV) radiation source (10-200 nm) driven by UV and visible nanosecond laser pulses. This source will provide high spectral resolution and broad tunability for the study of i) photoionization and dissociative photoionization dynamics of molecules and radicals, and ii) material modification with short wavelength radiation for nanoscience.

The project involves both generating tunable pulsed VUV/XUV radiation and integrating this new laser source with an experimental setup that will allow gas-phase and condensed matter studies.

## Candidate Profile

The ideal candidate will possess a Master's degree in Physics, Chemistry, Photonics, or a related discipline, coupled with a strong background in light-matter interactions. A keen interest in experimental physical chemistry and laser spectroscopy is essential. While experience with lasers and vacuum systems is desirable, it is not mandatory. Programming skills are considered a plus. Excellent teamwork, communication, and independent research abilities are crucial for success in this role. The PhD work will provide ample opportunities for presenting research at international conferences and publishing in peer-reviewed journals.

## Working environment

The PhD work will be conducted at the Lasers, Nanostructures and Materials Processing Group at IQF-CSIC, which provides a vibrant and collaborative research environment. The group has extensive expertise in laser-matter interaction, laser processing, laser spectroscopy, and dynamics and control of molecular processes. The candidate will have access to state-of-the-art laboratory facilities. There will be collaboration with other groups within the MATRIX consortium and potentially with external facilities.

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## Contract details

The successful candidate will be hired according to the CSIC (National Research Council of Spain) regulations and receive a gross monthly salary of at least 1700 € before taxes, along with health insurance, with 14 payments per year. The candidate will be enrolled in a PhD program at a Madrid University to have the opportunity to present and defend his/her PhD thesis.

## Quick facts

**Contract modality:** CSIC predoctoral contract
**Gross monthly salary:** 1,700 € (14 payments); 23,800 € per year
**Benefits:** 3-year contract
**Estimated starting date:** June - September 2025
**Enrolment in university PhD program:** Universidad Autónoma or Universidad Complutense de Madrid.
**Supervisors**: Esther Rebollar and Rebeca de Nalda

## Contact

Candidates should send their applications to:

- Esther Rebollar: e.rebollar@csic.es
- Rebeca de Nalda: r.nalda@csic.es