



Elettra Sincrotrone Trieste

# Postdoctoral Research Associate at SuperESCA

Deadline: 15 July 2023

Ref: DB/23/16

## Background

Elettra Sincrotrone Trieste is an international multidisciplinary research center operated as a user facility, featuring a 2.0/2.4 GeV, third-generation synchrotron light source (Elettra), a new free-electron laser light source (FERMI) and a variety of support laboratories. The extremely high quality of the machines and beamlines has set new performance records and has been producing results of great scientific and technological interest. In order to allow the laboratory to remain competitive in the next 20 years, an entirely new source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being developed. The new source will exhibit a major increase in the brilliance and coherence fraction of the photon beams. The Elettra 2.0 optics is based on our enhanced symmetric six bend achromat structure (S6BA-E) with a 12-fold symmetry and an emittance of 200 pm-rad at 2.4 GeV. The new structure creates also straight sections in the arcs permitting the installation of additional insertion devices, thus increasing the number of beamlines. Existing beamlines will have to be upgraded and new beamlines developed to take full advantage of the characteristics of Elettra 2.0. The new machine is scheduled for commissioning in the second half of 2026. See <http://www.elettra.eu> for more information.

## Beamline/Activity/Project description

The SuperESCA beamline provides linearly polarized photons in the 90-1500 eV energy range with high flux and high energy resolution. The beamline houses an experimental station where high resolution photoemission and absorption spectroscopy and X-ray photoelectron diffraction (XPD) measurements are carried out routinely. The advanced instrumentation of SuperESCA enables fast-XPS measurements to be performed at the state-of-the-art, providing experimental access to a wealth of dynamic processes occurring on surfaces. Research projects at SuperESCA focus on the electronic and chemical properties of surfaces and nanostructures, analyses of surface reactions in real-time and determination of the atomic structure of surfaces, interfaces and thin films, in particular 2D materials. These activities are performed by exploiting the capabilities presently offered by the SuperESCA beamline and by further developing its instrumentation in order to accomplish the experimental needs.

See <http://www.elettra.eu/elettra-beamlines/superesca.html> for more information.

## Job description

The successful candidate will conduct research on the electronic, chemical and structural properties of a wide range of in-situ prepared complex materials, particularly 2D systems, addressing relevant topics in surface science and surface chemistry. The research associate is expected to propose and perform research independently, as well as provide assistance to and collaborate with external users. Furthermore, as part of the beamline staff, she/he will help ensure the SuperESCA ordinary operation and maintenance, and collaborate to the related upgrade program in order to meet the experimental needs of the user community.

## Qualifications

A Ph.D. in Physics, Chemistry or a related discipline is required. The candidate must not have more than 6-years of total postdoctoral experience, in academic institutions or private companies. Applications will be considered also from candidates who have completed a doctoral course of studies and for whom the defense has been scheduled. In any case, the Ph.D. must be awarded by the end of July 2023.

A background in ultra-high-vacuum methods for surface analysis, sample surface preparation, film and nanostructures growth is required. A track record in surface science is expected.

Proven experience in the at least two of the following techniques is required: X-ray photoelectron spectroscopy, angle-resolved photoemission, photoelectron diffraction and absorption spectroscopy.

The following qualifications will be considered as additional assets:

### Elettra - Sincrotrone Trieste S.C.p.A.

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- Previous participation in experiments at synchrotron radiation facilities
- Experience in the construction of scientific equipment relevant to UHV systems or for synchrotron beamlines
- Programming skills in LabView and Igor Pro, with demonstrated ability in data processing

The successful candidate should possess strong interpersonal skills favoring collaborative research programs in a team-oriented environment.

Good time management skills and ability to prioritize are expected, together with the ability to interact with the facility staff and international users at all levels and to work as part of a multi-disciplinary team.

Good oral and written communication skills in English are essential.

The appointment will be a fixed term contract with an initial duration of 12 months. The salary will be commensurate with previous experience and qualifications of the candidate.

Applications should include a full curriculum vitae, the names and contact information (including electronic mail) of up to three persons who have agreed to provide references.

The interviews may be held via video conferencing.

The deadline for the submission of the application is July 15, 2023.

In accordance with the provisions of article 21 of the Italian legislative decree no. 39/2013 and in conjunction with article 53 (subsection 16ter) of Italian legislative decree no. 165/2001, employees or former employees of any Italian Public Entity who have exercised authority over Elettra Sincrotrone Trieste S.C.p.A. or have negotiated with Elettra - Sincrotrone Trieste S.C.p.A. within the last three years will be excluded from the present selection procedure. We thank all applicants in advance.

For more information, please contact Silvano Lizzit (email: [silvano.lizzit@elettra.eu](mailto:silvano.lizzit@elettra.eu)).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=3201>

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