



Elettra Sincrotrone Trieste

Senior Scientist at SuperESCA

Deadline: 3 November 2023

Ref: DB/23/31

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 requested by the user community.

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

Job description

The successful candidate will work in close collaboration with the coordinator and the staff of the SuperESCA beamline, actively contributing to the management, operation, optimization, and maintenance of the beamline and its experimental stations. She/he 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 and provide high-quality support to external users, closely following their experiments as local contact. She/he is expected to promote collaboration with key users, both at national and international level, and to expand the research network of the beamline. The candidate will also actively contribute to define and develop in-house research activities.

Furthermore, the candidate will be strongly involved in the Elettra beamline upgrade program within the Elettra 2.0 project. In particular, she/he will participate in the design and construction of the SuperESCA upgrade, in order to meet the high expectations of the user community of the beamline.

Qualifications

A Ph.D. in Physics, Chemistry, Materials Science or a related discipline and several years of research experience after the PhD are required. The successful candidate must have deep knowledge and proven experience in ultra-high-vacuum methods for surface analysis, sample surface preparation, film and nanostructures growth. Furthermore, she/he must have an outstanding publication record in the application of at least three of the following techniques to the study of materials:

- High-resolution X-ray Photoelectron Spectroscopy (XPS)

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

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Elettra Sincrotrone Trieste

- High-resolution Angle-Resolved PhotoEmission Spectroscopy (ARPES)
- X-ray Photoelectron Diffraction (XPD)
- Near-Edge X-ray Absorption Fine Structure (NEXAFS)

Previous experience as local contact and/or beamline scientist at synchrotron radiation facilities will be considered a plus.

The following qualifications will be considered as valuable assets:

- research background in 2D materials, and in particular graphene, transition metal dichalcogenides, topological insulators, thin oxide films;
- experience in the construction, commissioning and operation of scientific instruments, e.g., parts of beamlines or beamline end-stations;
- programming skills in LabView and/or Igor Pro and 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; good knowledge of spoken and written Italian is desirable.

The appointment will be a fixed term contract with a duration of 36 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 November 3, 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).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=3423>

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