Elettra Sincrotrone Trieste

Senior Scientist for the SuperESCA beamline

Deadline: 13 December 2025
Ref: DB/25/33

Background

Elettra Sincrotrone Trieste is an international multidisciplinary research center offering international users access to synchrotron and free-electron laser radiation for the characterization and processing of matter. The extremely high quality of the light sources 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 synchrotron radiation source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being installed and will join the already operating free-electron source FERMI in the second half of 2026. 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 are being upgraded and new beamlines constructed to take full advantage of the characteristics of Elettra 2.0. Seehttp://www.elettra.eufor more information.

Beamline/Activity/Project description

The SuperESCA beamline provides linearly polarized photons in the 140-1800 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. 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 while continuously advancing its instrumentation to meet the evolving needs of the user community. In this context, and within the framework of the Elettra 2.0 project, SuperESCA is undergoing a major upgrade aimed at enhancing the performance of both the beamline and the experimental station through the development of new instrumentation.

Job description

The successful candidate will be part of the SuperESCA beamline team. He/she will contribute overseeing all research and technical activities carried out at the beamline. He/she will play a key role in upgrading and commissioning the beamline and experimental station instrumentation for its operation on Elettra 2.0.

He/she will be expected to play a pivotal role in guiding the research activities and fostering collaborative initiatives in materials science, while also being actively involved in the management of the beamline to ensure its effective operation.

In addition, he/she will develop a research programme that both exploits the current capabilities of the beamline and, where possible, expands them. This will involve submitting proposals to relevant funding agencies, actively participating in collaborative projects, and leveraging a broad professional network to ensure the scientific success of the beamline and to plan future upgrades beyond Elettra 2.0.

A key responsibility will be to broaden and strengthen the user community, partly through active outreach, by promoting the realization of users' research, supporting proposal submission, assisting users with experiment execution and data analysis, and consistently providing high-quality support.

Qualifications

A PhD in Physics, Materials Science, or a related discipline, is required, togetherwith:

- several years of postdoctoral research experience;

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- a strong track record in the key areas of 2D and quantum materials as demonstrated by a publication record commensurate with career development;

- proven experience with ultra-high-vacuum methods for surface analysis, sample surface preparation, and the growth of films and nanostructures are required;

- demonstrated expertise with the following synchrotron-based techniques for materials characterization:

- High-resolution X-ray Photoelectron Spectroscopy (XPS) and Fast-XPS;

- High-resolution Angle-Resolved Photoemission Spectroscopy (ARPES);

- X-ray Photoelectron Diffraction (XPD).

Prior experience as a beamline scientist or beamline manager at synchrotron radiation facilities will be considered an advantage, as will be expertise in the following areas:

- 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.

General information

The appointment envisioned is a permanent staff position, with a three-months trial period and employment starting on January 18, 2027.

The salary will be commensurate with the previous experience and qualifications of the selected candidate.

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

The interviews may be held via video conferencing.

The ranking of suitable candidates resulting from this selection process may be used within the following 24 months.

Permanent employees of Elettra Sincrotrone Trieste S.C.p.A. will be excluded from the present selection procedure. 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 also be excluded from the present selection procedure, in accordance with the provisions of article 21 of the Italian legislative decree no. 39/2013 and in conjunction with article 53 (subsection16ter) of Italian legislative decreeno. 165/2001.

The deadline for the submission of the application is December 13, 2025.

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=4271