Elettra Sincrotrone Trieste

Instrumentation Research Associate at the TwinMic beamline

Deadline: 10 May 2025
Ref: DA/25/13

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 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 212 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. Seehttp://www.elettra.eufor more information.

Beamline/Activity/Project description

Presently, the TwinMic beamline provides photons in the 400-2200 eV energy range and its end-station can be used to perfom high-resolution X-ray microscopy (STXM, TXM and Ptychography) coupled with low energy X-ray Fluorescence (LEXRF) and micro-XANES spectroscopies. At TwinMic characterization of various materials at the sub-micron scale can be performed, covering research fields such as novel materials, nanotoxicology, food science, neuroscience and clinical medicine.

Within the Elettra 2.0 program, important upgrades of the TwinMic beamline are foreseen, which concerm both the beamline photon energy range as well as the experimental station in order to offer additional imaging schemes and increase the lateral and spectral resolution of the existing ones.

See http://www.elettra.eu/elettra-beamlines/twinmic.html for more information.

Job description

The successful candidate will be involved in the upgrade of the TwinMic beamline and experimental station during the Elettra dark period (July 2025-November 2026), when the removal of Elettra and the installation of Elettra 2.0 will take place. He/she will join the TwinMic beamline staff in the ongoing in-house technological developments, including new imaging systems and detectors, and in the new end-station and beamline design for Elettra 2.0. In addition, from the Spring 2027, at the reopening of TwinMic, the beamline staff will begin again to provide high-quality support to external users, thus gaining opportunities for collaborative work at the frontiers of the field.

Qualifications

The following qualifications are expected:

- Degree in Engineering, Physics, Materials Science or related disciplines.
- Proven knowledge of complex instrumentation design and development (i.e., synchrotron instrumentation, beamlines, experimental stations, detectors or detector systems, X-ray optics systems etc)
- Proven experience in at least one of the following experimental techniques: (i) X-ray microscopy, (ii) Ptychography, (iii) X-ray Fluorescence.
- Good oral and written communication skills in English.

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The following qualifications will be considered as additional assets:

- PhD in Engineering, Physics, Materials Science or related disciplines.
- Experience with X-ray absorption spectroscopy instrumentation
- Experience with Coherent Diffractive imaging and Phase Retrieval
- Hands-on experience with vacuum systems or cryogenic sample environments
- Hands-on experience with soft X-ray optics and detector systems
- Good programming skills in Python for data analysis, use of Linux and CAD design software
- Working knowledge of Italian

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

General information

The deadline for the submission of the application is May 10, 2025.

The appointment envisioned is a fixed-term contract of an initial 12 months duration extendable up to 36 months, upon agreement between the parties, as foreseen by the beamline work program and in accordance with the National Metalworkers' Union Collective Labour Agreement and the Company Union Agreement dated 28th March 2024,ex. art. 8 of the Decree Law 138/2011.

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

Applications should include a full curriculum vitae (CV). The CV must include a complete list of the candidate's publications (scientific papers, book chapters, patents, technical reports, ...) and any relevant information for the position, highlighting the pertinence to the present position. In addition, the names and contact information (including electronic mail) of at least two references shall be included.

Employees or former employees of Elettra Sincrotrone Trieste S.C.p.A. or temporaryand staff leasing employees or former employees with working experience atthe companywill 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 decree no. 165/2001.

We thank all applicants in advance.
For more information, please contact Alessandra Gianoncelli (email: alessandra.gianoncelli@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4251