



Elettra Sincrotrone Trieste

TwinMic Beamline Scientist at Elettra

Deadline: 31 December 2024

Ref: DA/24/58

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 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. See <http://www.elettra.eu> for more information.

Beamline/Activity/Project description

The TwinMic beamline provides photons in the 400-2200 eV energy range and the beamline end-station allows users to perform 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 TwinMic are foreseen, which concern both the beamline photon 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 actively involved in the operation, maintenance and upgrade of the TwinMic beamline and experimental station in order to meet the requirements of a broad user community. He/she will collaborate with the TwinMic beamline staff in the ongoing in-house scientific projects and technological developments, including new imaging methods, such as ptychography, and new end-station and beamline design in view of Elettra 2.0. In addition, she/he will also provide high-quality support to external users, thus gaining opportunities for collaborative work at the frontiers of the field before the dark period starting in July 2025, when the removal of Elettra and the installation of Elettra 2.0 will take place.

He/she is also expected to establish new research collaborations and to be involved in submitting proposals to suitable funding agencies, and to attract new users.

He/She is expected to develop her/his own research program and to promote the capabilities and scientific accomplishments of the beamline.

Qualifications

The following qualifications are required:

- Degree and PhD in Engineering, Physics, Materials Science or related disciplines;
- At least 4 years of experience in measurement and data analysis in Scanning Transmission X-ray Microscopy (STXM)

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and low-energy X-ray Fluorescence (LE-XRF);

- Experience in handling and analysing biological samples by STXM and LE-XRF;
- Experience in X-ray absorption spectroscopy in the soft X-ray regime (<2keV).
- Good oral and written communication skills in English.

Only candidates with a publication record relevant to the expected qualifications will be considered.

The following qualifications will be considered as additional assets:

- Experience with procedures and methods for XRF quantitative analysis;
- Experience with Ptychography, 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;
- 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 team.

General information

The appointment envisioned is a permanent staff position, with a 6 months trial period. 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.

The interviews may be held via video conferencing.

The deadline for the submission of the application is December 31, 2024.

Permanent employees of Elettra Sincrotrone Trieste S.C.p.A. and 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, 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. We thank all applicants in advance.

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4231>

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