Elettra Sincrotrone Trieste

XRF Beamline Scientist at ELETTRA

Deadline: 28 July 2022
Ref: DA/22/23

Company description

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 X-Ray Fluorescence (XRF) beamline operates in the 2000-14000 eV photon energy range and hosts a versatile instrument enabling the use of various X-Ray Spectrometry techniques such as Grazing Incidence/Exit X-Ray Fluorescence, Total Reflection XRF, XRF, X-Ray Reflectometry and X-Ray Absorption Spectroscopy (XANES) for analysis of materials as well as probing theoretical X-ray fundamental parameters. The XRF beamline and its experimental station are operated in partnership with the International Atomic Energy Agency (IAEA).

The research areas of interest for the XRF facility include materials sciences (e.g., characterization of nanostructured materials, materials for solar cells), environmental science (e.g., airborne particulate matter, water samples, suspensions, coal fly ash), biomedicine (e.g., speciation of trace elements in human tissues for cancer studies), biology (e.g., study of essential or toxic elements in plants to develop/improve biofortification, phytoremediation and phyto-mining techniques), cultural heritage (e.g., preventive conservation and study of ancient artifacts).

See http://www.elettra.trieste.it/lightsources/elettra/elettra-beamlines/microfluorescence/x-ray-fluorescence.html for more information.

Within the Elettra 2.0 upgrade program the XRF beamline as well as the experimental station will be completely rebuilt. In particular, the new photon source will be an in-vacuum undulator, the optical scheme for the photon transport and the endstation will be redesigned and refurbished.

Job description

The successful candidate will join the beamline staff and in running and further developing the XRF facility. She/he will contribute to the management, operation, optimization, maintenance and upgrade of the beamline and experimental station. She/he will be involved in the Elettra upgrade program. In particular she/he will be contributing to the design of the new XRF-IVU beamline and experimental station in order to meet the high expectations of the user community.

She/he is expected to provide daily high-quality support to external users through the role of local contact, thus gaining opportunities for collaborative work at the frontiers of the field and contributing to the definition and execution of *in-house* research activities. In particular, she/he will participate in and promote the scientific activities related to X-ray spectrometry in collaboration with other Elettra beamlines and international laboratories.

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

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Qualifications

A PhD in Physics, Chemistry, Materials Science or related disciplines and proven experience in X-ray spectrometry and X-ray absorption spectroscopy are mandatory. Knowledge of EXAFS/XANES data analysis and XRF quantitative analysis are also expected. Proven work-experience in a synchrotron radiation beamline is crucial, since it would attest the candidate's ability to work with user groups having different scientific backgrounds. Hands-on experience in X-ray instrumentation and experience in operating a beamline dedicated to X-ray fluorescence or similar would be considered a plus. The following competences will be considered as additional assets:

- Coding capabilities (e.g., using Python, Mathematica, LabView)
- Knowledge of image processing techniques.

Only candidates with a publication record relevant for the advertised position will be considered.

The successful candidate should possess strong interpersonal skills to pursue collaborative research programs in a team-oriented environment and become part of existing research collaborations.

Good time management skills and ability to prioritize are expected, together with the ability to interact with project partners and work as part of a multidisciplinary team.

Good oral and written communication skills in English are essential. A working knowledge of Italian would be desirable, but is not required.

The appointment envisioned is a permanent staff position.

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

Applications should include full curriculum vitae, contact information (including electronic mail) of at least two references.

Due to the situation related to the COVID-19 virus, the interviews will be performed through video conferencing.

The deadline for the submission of the application is July 28, 2022.

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, 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 Giuliana Aquilanti (email: giuliana.aquilanti@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=2641