Elettra Sincrotrone Trieste

Postdoctoral Research Associate for KNOWSKITE-X European Project (XAFS beamline)

Deadline: 18 May 2023
Ref: DA/23/11

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 XAFS beamline is dedicated to X-ray absorption spectroscopy in the hard X-ray range. It is installed on a bending magnet source and covers a wide energy range allowing the study of a large number of elements: from sulphur to bismuth. The optical scheme guarantees a stable and spatially homogeneous beam over the whole energy range, and the detection system assures high quality data in both transmission and fluorescence mode. In addition, several sample environments are available. These characteristics meet the needs of a large number of researchers in the area of conventional X-ray absorption spectroscopy.

Research projects at the XAFS beamline include the electronic and local structural characterization of systems relevant in many scientific fields: from materials science to solid state physics, from electrochemistry to environmental and earth sciences. These activities are performed by exploiting the capabilities presently offered by the XAFS beamline and by further developing its instrumentation in order to satisfy the experimental needs.

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

Elettra is one of the partner of the European project KNOWSKITE-X (https://cordis.europa.eu/project/id/101091534). In particular the XAFS beamline will be used for the structural characterization of materials based on perovskites to be used as new generation electrodes for reversible Solid Oxide Fuel Cells (SOFC) and electrolysers (SOEC). The project, in addition to *ex situ* and *in situ* characterization using x-ray absorption spectroscopy, foresees the development of a cell for XAS spectro-electrochemical measurements of electrode evolution during potential cycling.

Job description

The successful candidate will be involved in the study of materials using X-ray absorption spectroscopy. Moreover, he/she will collaborate with the beamline staff in running and further developing the XAFS beamline and experimental station in order to meet the project goals.

The successful candidate will have the possibility to pursue his/her personal research by using the available instrumentation during dedicated in-house research beamtime. He/she is also expected to be involved in submitting proposals to suitable funding agencies and establish new research collaborations.

Qualifications

A Ph.D. in Physics, Chemistry, Engineering or a related discipline is required. The candidate must not have more than

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6-years of total postdoctoral experience, in academic institutions or private companies. Applications will be considered also from candidates who have completed a doctoral course of studies and for whom the defense has been scheduled. In any case, the Ph.D. must have been obtained before the signature of the employment contract.

The successful candidate is expected to be experienced in electrochemistry characterization techniques and in spectroscopic methods applied to energy materials. Experience in *in situ* and *operando* measurements would be desirable. Experience in x-ray absorption spectroscopy and EXAFS/XANES data analysis would be considered an asset.

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.

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

The appointment envisioned is a fixed term contract with an initial duration for 12 months renewable for other 24 months upon agreement of the parties. The salary will be commensurate with the previous experience and qualifications of the candidate.

Applications should include full curriculum vitae and, if possible, contact information (including electronic mail) of the two references.

Depending on the evolution of the COVID-19 pandemic, the interviews may be held via video conferencing.

The deadline for the submission of the application is May 18, 2023.

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 Giovanni Agostini (email: giovanni.agostini@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=3101