



Elettra Sincrotrone Trieste

Postdoctoral Research Associate for the SYRMEP beamline at Elettra

Deadline: 11 June 2021

Ref: DA/21/12

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

Beamline/Activity/Project description

The SYRMEP beamline at Elettra is devoted to advanced applications of hard-X-ray imaging techniques in biomedicine, biology and materials science.

The experimental set-up allows for the use of absorption and phase contrast techniques for microtomography studies in a wide spatial resolution range, from the micron scale to several tens of microns, according to sample size and the required spatial resolution. The beamline is very versatile, allowing for the use of monochromatic or white/pink beam and X-ray imaging with different modalities. The most used method is the propagation-based phase contrast technique, applicable with a wide range of propagation distances (from a few cm to more than 10 m). A set-up for analyzer-based imaging based on a double crystal system working in Bragg modality is also available. Other techniques such as coded apertures, gratings and speckle imaging have been tested in collaboration with users and their implementation is under consideration.

The large angular acceptance guarantees a beam with a horizontal size of more than 20 cm at 30 m from the source, which makes it possible the study of large samples.

The research activities exploit the capabilities presently offered by the SYRMEP beamline in many fields of materials and life sciences, as well as cultural heritage. Further developments are foreseen thanks newly funded projects aiming at enhancing beamline performance. These include optimization of low-dose dynamic CT protocols usable for in-vivo imaging on small animals, addressing all of the issues related to fast scans acquisition, handling triggers, motion monitoring, artefacts correction, etc.

In the framework of the Elettra 2.0 upgrade plan, i.e., the implementation of a new diffraction-limited synchrotron radiation source, the research directions will be further widened, thanks to the realization of a new imaging beamline dedicated to applications in the Life Sciences with a superbend magnet as a source, which will provide much higher X-ray fluxes in a wider energy range.

See <http://www.elettra.eu/elettra-beamlines/syrmep.html> for more information.

Job description

The successful candidate will collaborate with the beamline staff for the beamline upgrade, including the implementation and test of new detectors, the development of new protocols for low-dose dynamic imaging for in-vivo applications and the optimization of multiscale microCT studies applied to virtual histology.

He/she will be actively involved in the *in-house* scientific activities carried out at SYRMEP and with beamline users and collaborators. The candidate is expected to provide a high-quality support to the beamline users and collaborators, in the preparation of experiments, assistance during the beamtime and for data analysis. He /She will be involved in the development of new standardized imaging protocols to facilitate the use of the micro-CT facilities by non-expert users and in the realization of user-dedicated tutorials for beamline operation, image acquisition and data reconstruction.

Elettra - Sincrotrone Trieste S.C.p.A.

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Qualifications

A PhD in Physics or Engineering or related disciplines awarded within the last six years is required, as well as proven experience in phase-contrast imaging and X-ray tomography. 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 PhD must be awarded by the end of May 2021.

Experience in handling imaging experiments with synchrotron radiation using absorption, phase contrast and phase retrieval algorithms is expected. Knowledge of 3D image processing tools and the use of Avizo, or Dragonfly, or VGStudio or similar packages is highly desirable. Programming skills in Matlab or Python would be considered an asset.

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

Good time management skills and ability to prioritize are expected, together with the ability to interact with beamline 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.

The appointment will be a fixed term contract with an initial duration of 12 months.

The salary will be commensurate with previous experience and qualifications of the candidate. Applications should include a full curriculum vitae, the names and contact information (including electronic mail) of up to three individuals who have agreed to provide references.

The deadline for the submission of the application is June 11, 2021.

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

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, 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 Tromba (email: giuliana.tromba@elettra.eu).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=1881>

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