Elettra Sincrotrone Trieste

# Scientist for SISSI-Chemical and Life Science beamline (SISSI-Bio) at Elettra 2.0

Deadline: 25 April 2025
Ref: DA/25/14

## 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) will be realized. 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

SISSI-Chemical and Life Science (SISSI-Bio) is the branch of the infrared beamline at Elettra, SISSI (Synchrotron Infrared Source for spectroscopy and Imaging). The beamline extracts the IR and visible components of synchrotron emission and use it to perform multiscale IR vibrational analyses. The endstations are equipped with state-of-the-art instrumentation: two Bruker Hyperion microscopes, with Focal Plane Array (FPA) detectors for chemical imaging at the microscale, an in-vacuum interferometer for FIR and MIR spectroscopy experiments, a mIRage LS from Photothermal Spectroscopy Corp. for Optical Photothermal IR measurements with submicron resolution and two Attocube s-SNOM systems for spectroscopy and imaging at the nanoscale. Spectroscopy, microscopy and nanoscopy instruments may be operated both with IR synchrotron radiation and benchtop sources. Applications cover a wide range of research fields, including Life and Medical Sciences, Molecular Biology, Biophysics and Biochemistry, Soft-Matter, Environmental Science and Cultural Heritage.

As part of the Elettra 2.0 upgrade program, the SISSI beamline is scheduled to be completely renewed. Exploiting the increased brilliance of the new machine, the aim is to strengthen sub-diffraction limited applications in the Medium and Far IR ranges. The new beamline is foreseen to be operational in 2028. During the dark period (from July 2025 through December 2026), devoted to the removal of Elettra and the installation of Elettra 2.0, SISSI-Bio will be operational as a user's offline facility, SISSI-Bio Offline (https://www.elettra.eu/lightsources/labs-and-services/sissi-bio-laboratory/sissi-bio-offline.html).

## Job description

The search is for a scientist for SISSI-Bio, who will operate both the offline facility and the future SISSI-Bio beamline. The successful candidate will work creatively in a multidisciplinary team exploiting the state-of-the-art diffraction-limited and sub diffraction-limited instruments to conduct cutting-edge infrared experiments in collaboration with the Elettra user community, also creating fruitful synergies with the new analytical capabilities that will be offered by the Elettra 2.0 beamline.

He/She is expected to conduct independent research and to attract new users, publish peer-reviewed articles, give presentations at scientific conferences, and apply for financial support to national or international funding Agencies. He/She is also expected to be involved in the design, execution and reporting of possible confidential research activities performed in collaboration with industrial customers.

## Qualifications

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A PhD in Physics, Chemistry, Engineering, or related disciplines is required. The successful candidate must have consolidated expertise in infrared vibrational spectroscopy and proven experience in infrared spectroscopy using synchrotron radiation sources as applied to bio-oriented and soft-matter research. Proven experience in the field of Cultural Heritage will be well-received.

The candidate must have extensive experience on spectral interpretation and infrared data analysis, including quantitative and chemometric approaches. In addition, he/she must have substantial proven experience in IR scattering type scanning near field microscopy, either with benchtop or synchrotron sources, for hyperspectral nanoscopy. Experience with Optical Photothermal Infrared instrumentation and its applications will be an asset.

Previous involvement of the candidate in industrial-oriented research is desirable.

Good time management skills, the ability to prioritize effectively, and the capacity to engage with facility users and colleagues and to work within a multidisciplinary team are necessary qualifications.

Proficiency in both oral and written communication in English is essential.

## General information

The deadline for the submission of the application is April 25, 2025.

The appointment envisioned is a permanent position. 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 interviews may be held via video conferencing.

Permanent employees of Elettra Sincrotrone Trieste S.C.p.A. will 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 Giovanni Birarda (email: giovanni.birarda@elettra.eu).

To apply for this position please visit the following link:
https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=4252