

The ELI (Extreme Light Infrastructure) Project is an integral part of the European plan to build the next generation of large research facilities in new EU member states. ELI-Beamlines is a cutting edge laser facility currently being constructed in Dolni Brezany, next to Prague in the Czech Republic. ELI will deliver ultrashort, ultraintense laser pulses lasting typically a few to a few tens of femtoseconds at unprecedented combinations of intensity and repetition rate. It will make available a unique combination of time synchronized beams from the primary lasers and secondary light sources to cover the broad range of the electromagnetic spectrum from the THz to hard X-ray region. This will establish new frontiers in optics and photonics to create breakthrough science in physics, chemistry, medicine, biology and material science. At ELI Beamlines, Research Program 4 (RP4) develops interdisciplinary applications in Molecular, Bio-medical and Materials (MBM) Sciences. Specific research areas under development are Atomic, Molecular and Optical (AMO) sciences, Coherent Diffractive Imaging, time-resolved X-ray diffraction and spectroscopy, time-resolved VUV magneto-optical ellipsometry and advanced optical spectroscopy methods.

Instrumental scientist for ultra-fast spectroscopy and imaging

As part of the experimental capabilities at ELI Beamlines, RP4 develops a beamline and multi-purpose user end-station for applications in AMO sciences (MAC). The MAC user end-station is equipped with electron/ion spectrometers, detectors for coherent diffractive imaging and state-of-the-art sample delivery systems to enable advanced photon science experiments on low density targets (atoms, molecules, clusters, nanometer size organic and inorganic particles, vacuum compatible sub-micrometer size liquid sheets and aerosols). AMO experiments have particularly high demands on alignment, synchronization and optimization of the experimental set up. In user operation the high value of the user beamtime motivates the development of methods for immediate feedback on the quality of collected data. To cover these needs we are working on the implementation of open-source software (often Python-based) for high repetition-rate imaging and spectroscopy applications for real-time analysis of diffraction and spectroscopy data similar to those implemented at X-ray free electron laser facilities (see e.g. <http://www.lmb.icm.uu.se/2016/04/22/hummingbird-data-analysis-in-real-time/>).

We are now looking for a junior researcher/instrumental scientist to contribute to the development of unique experimental capabilities of the MAC user end-station. Following completion of the ELI Beamlines facility the successful candidate will be working both on independent research program as well as will support members of an international user community who come to work at the scientific end stations.

The work will be predominantly focused on following topics:

- development of experimental capabilities of the MAC user end-station
- participation in *in-house* research program as well as support of the user experiments at the MAC user end-station
- contribution to the relevant research activities of the RP4 group within national and international collaborators at synchrotrons and X-ray free-electron laser facilities

Requirements:

- PhD in physics, chemistry or related field is desirable. Highly motivated candidates with M.Sc. degree are also encouraged to apply (in that case the position will be transferred to a PhD student position)
- strong interests in development of scientific instruments, in establishing concepts for data acquisition and experimental control
- programming skills in Python, Matlab are beneficial
- strong interests in scientific fields related to laser physics, nonlinear optics, high harmonic generation, physics with ultra-short pulses, interaction of light with matter, atomic and molecular physics, coherent diffractive imaging
- good networking and communication skills, capability to work in team
- a good knowledge of spoken and written English is necessary as the work environment is international

We offer:

- the opportunity to contribute to the unique scientific project and to develop own scientific profile in the interdisciplinary research field
- career growth, professional education
- competitive and motivating salary
- 5 weeks of holidays and other employee benefits
- pleasant work environment in highly motivated international research-team

Project related questions can be addressed to Maria Krikunova (e-mail: maria.krikunova@eli-beams.eu) and Jakob Andreasson (e-mail: jakob.andreasson@eli-beams.eu)

Applications, containing CV, cover letter, contacts of references, and any other material the candidate considers relevant, should be sent to Mrs. Jana Ženíšková (jana.zeniskova@eli-beams.eu, +420 601 560 322).

Information regarding the personal data processing and access to the personal data at the Institute of Physics of the Czech Academy of Sciences can be found on: <https://www.fzu.cz/en/processing-of-personal-data>