Extreme Light Infrastructure ERIC / ALPS Facility / ELI-Beamlines

The Extreme Light Infrastructure (ELI ERIC) is the world's largest high-power laser research facility, offering cutting-edge lasers for groundbreaking science and innovation. Operating across two sites – ELI Beamlines in the Czech Republic (near Prague) and ELI ERIC ALPS Facility in Hungary (Szeged) – it employs a diverse team of experts from around the globe.

ELI Beamlines operates four advanced femtosecond laser systems, delivering unmatched intensities. These lasers drive unique X-ray and particle sources for groundbreaking research in physics, chemistry, materials, life sciences, and astrophysics.

ELI ERIC ALPS Facility operates lasers and secondary sources to deliver ultrafast light pulses (including attosecond pulses) for pioneering research in physics, chemistry, materials and life sciences. Its advanced systems enable exploration of ultrafast electron dynamics and complex molecular processes.

We are currently seeking highly motivated, self-driven, experienced candidate to join our team at ELI ERIC ALPS Facility in the role of:

Head of Ultrafast Science and Applications Division

Description of the Ultrafast Science and Applications Division at ELI ERIC ALPS Facility

Mission:

The mission of the Ultrafast Science and Applications Division is to develop and provide state-of-the-art user stations for femtosecond and attosecond time-resolved experiments in solid, liquid and gas phases. We perform research on the fastest processes in various molecular and solid-state media and serve the facility with background infrastructure such as high-level nanofabrication, chemistry and biology laboratories. We also provide theoretical support and numerical simulations for experiments that are performed at ELI ERIC ALPS Facility.

The scientific activities within the Ultrafast Science and Applications Division are carried out in the following groups:

The Ultrafast Nanoscience Group performs experiments with various application-oriented nanosystems together with user groups, and provides nanofabrication support for facility users.

The Surface Dynamics Group runs the NanoESCA (PEEM) instrument and its use in various femto- and attosecond time-resolved experiments.

The Chemical Dynamics Group investigates ultrafast processes in chemical systems and develops pump-probe schemes using ELI ERIC ALPS Facility light sources.

The Biomedical Applications Group mainly performs radiobiology experiments with laser-based particle and radiation sources.

The Theory and Simulations Group provides solid user support in data evaluation, theoretical and numerical methods for experiments performed at ELI ERIC ALPS Facility in attosecond science, ultrafast solid-state, molecular physics etc.

Technologies:

- A unique NanoESCA end-station involving PEEM, ARPES, LEED and XPS modes of operation and a gold coated Ir(100) spin filter. The PEEM mode provides a lateral resolution of 35 nm. The instrument boasts 13 meV resolution in the energy resolved PEEM mode. In k-resolved momentum microscopy 0.01 Å-1 resolution can be achieved. The end-station is connected to an attosecond beamline with an XUV monochromator option for femtosecond time-resolved experiments, as well.
- A nanofabrication facility performing electron beam lithography with ~10 nm resolution and direct-write focused ion beam nanofabrication (Ga-FIB) with ~25 nm resolution. The machine also includes a TEM lamella production feature.
- A zebrafish model for radiobiology experiments; it holds promise of becoming a simple model animal for this line of research in large-scale facilities.

What you will do:

The duties and responsibilities in the position include but are not limited to the following:

<u>**Strategic and Scientific Leadership**</u>

- Cooperate closely with the Science Director and the other Division Heads.
- Propose new strategic scientific directions and the development of research facilities, in collaboration with other Division Heads and Scientific Liaison Advisors.

- Propose the optimal use of human and financial resources within the Directorate, together with Division Heads and Advisors.
- Participate in optimizing processes at the Institute including administrative and user operations processes.
- Promote ELI ERIC ALPS Facility's research activities, strengthen visibility and prestige nationally and internationally, and present research capabilities and future access opportunities to the scientific community.

Research Infrastructure and Projects

- Coordinate activities related to the development of research infrastructure and the execution of research within the Ultrafast Science and Applications Division.
- Coordinate activities aimed at increasing user numbers at the instruments operated by the Division.
- Propose joint projects with other Science Divisions, and collaborations with the other ELI facilities.
- Oversee the design, construction, and operation of equipment.
- Propose R&D activities aimed at improving the research infrastructure.
- Take responsibility for the installation and operation of biological and chemical preparatory laboratories.

Operational and Technical Responsibilities

- Support the Science Director regarding equipment and staff of the Ultrafast Science and Applications Division.
- Ensures, in cooperation with the Science Director, the execution of feasibility studies related to user experiment proposals, as well as the implementation of projects approved by the Management Board..
- Ensure the availability of technical specifications required for procurement procedures related to the division's research infrastructure.

- Assess technical implementation and operational risks, and recommend appropriate risk-mitigation actions.

Human Resources and Competence Development

- Define required competencies and training needs of staff working in the division.

What we expect:

Minimum education and experience:

The successful candidate must hold a PhD in physics, or chemistry, or other related scientific field. Candidates with several years of experience in leadership, ideally gained in a research facility or academic environment.

Required skills and abilities:

- Proven track record as a senior individual contributor and/or scientific lead, capable of setting direction while remaining hands-on.
- Extensive experience in managing or developing advanced scientific instrumentation, research facilities, or large-scale experimental environments.
- Demonstrated ability to coordinate multidisciplinary research teams and complex technical projects.
- Excellent organizational, leadership, and problem-solving skills.
- Proactive, solution-oriented mindset with a collaborative approach.
- Fluency in English, both written and spoken.

Job location: Hungary, Szeged

Start time: As soon as reasonable

Why join us?

- **International collaborations:** Our team frequently engages in international scientific collaborations with both experimental and theoretical areas, offering excellent opportunities to expand your global network and engage in pioneering research with experts in the field.
- **Cutting-edge facility:** ELI ERIC ALPS Facility is part of the Extreme Light Infrastructure (ELI) project, providing access to some of the most advanced research tools in the world. ELI ERIC

ALPS Facility provides cutting-edge ultrashort light sources, including attosecond XUV and X-ray pulses, for the scientific community.

- **Quality of life:** We offer very competitive salaries in regional comparison, and the city of Szeged provides pleasant living conditions.

Please upload your CV and motivation letter to our Career Site: https://www.eli-alps.hu/en/Career-1