

ELI-HU Research and Development Non-Profit Limited Liability Company is announcing

**Job openings in Early Stage Researcher and Research Fellow positions in Surface Plasma Attosources (SPA) Group within the Attosecond Sources Division at ELI-HU**

**The Hungarian ELI: the Attosecond Light Pulse Source (ALPS)**

The first civilian large-scale research facility based on high-power lasers, the Extreme Light Infrastructure (ELI), is to be constructed with international cooperation at three locations with a coordinated management and research strategy. The Attosecond Light Pulse Source (ALPS) research centre to be built in Szeged, Hungary, will be devoted to study of electron dynamics on the femto-, attosecond scale in atoms, molecules, plasmas and biological samples.

The primary mission of the ELI-ALPS is to make a wide range of ultrafast light sources accessible to the user groups of the international scientific community, with special consideration to coherent extreme-ultraviolet (XUV) and x-ray radiations, and to attosecond pulses. ELI-HU Research and Development Non-Profit Ltd. coordinates the preparation, construction and operation of ELI-ALPS, an international laser research center.

**The project:**

Major research activities of SPA group include understanding the ultrafast dynamics of intense laser interaction with dense surfaces under extreme conditions of light intensity and pressure. At very high intensities the interacting surface becomes an ionized reflective plasma medium which then oscillates at near light speed in the laser field. These exotic dynamic mirrors give rise to coherent surface high harmonic XUV radiation in the reflected direction. Such a generation process offers a synergy of photonics, matter in dense form and relativistic plasma physics. The two state of the art upcoming solid high harmonic generation development beamlines within the SPA group would provide the unique opportunity to explore relativistic optics with few cycle kHz SYLOS laser and also the PW level HF laser.

At ELI-HU we are trying to go deep into the fundamental understanding of these processes in order to optimize it and then go one step further to harness these coherent XUV to give us the brightest and shortest pulses possible. Within the scope of the SHHG development beamlines we would merge state of the art technology with scientific understanding to develop a parameter space not accessible till date. The primary goal of the SPA group is to implement these SHHG development beamlines and undertake the necessary scientific R&D activity that leads to its further development as an attosource. As part of their training the candidates would also get chance to gain insight in project management, handle state of the art diagnostics and get knowledge to advanced metrology schemes as well as theoretical modelling.

**The potential candidates profile:**

The candidate should have background in laser matter interaction and/or ultrashort light pulses, High harmonic generation and spectroscopic investigations in gas or solid phase targets (must for post doctoral candidates). Experience in big collaborative projects and experiments would be valued.

The SPA group is looking forward to highly motivated self-driven candidates. The applicant must have good written and verbal English communication skills. A solid academic foundation in optics and photonics related field is expected. Experience in programming languages Matlab, Mathematica, Labview etc. would be given due weightage and familiarity with ray tracing packages, fortran/ python/ C++ languages is additional advantage. Experience with PIC simulations would be appreciated.

1. For early stage researchers:

- PhD students working in relevant research fields;
- Early stage researchers or engineers with work experience but may be without PhD degree.

2. For research fellows:

- Scientists or engineers with PhD degree (or submitted PhD thesis) and experience in relevant research field.
- Scientists preferably with post doctoral experience with good publication record.

**We offer:**

- Competitive salary
- Attractive fringe benefits
- Challenging job with carrier opportunities
- Pleasant working environment in a world class new infrastructure

During the employment the young scientists or research fellow may have the opportunity to enroll to a PhD program and work for a PhD degree. The successful candidates may have a duty to do part of their research and development work outside Hungary at contracted collaborators and partners of ELI-HU Non-Profit Ltd., as part of their training and education to their specific task.

**The application must contain:**

- A motivation letter
- A Europass curriculum vitae or detailed scientific curriculum vitae
- Full list of publications – highlighted the list of articles published in refereed journals and containing the following data:
  - h-index
  - cumulative impact factor (calculated by summing of impact factors of journals characteristic for the year of publication each articles)
  - number of citations without self-citations
- The name of two scientific supervisors or professors, who could give expert opinion about candidate's skills
- The candidate's postal address and other contact data (phone, fax, e-mail)

**Schedule:**

- Application deadline: continuous, valid until withdrawn
- Foreseeable date of the interview for selected candidates: within 4-8 weeks of application submission

For further scientific elaboration and informal discussion on this positions please contact Dr. Subhendu Kahaly at [subhendu.kahaly@eli-alps.hu](mailto:subhendu.kahaly@eli-alps.hu) and Dr. Katalin Varju at [varju.katalin@eli-alps.hu](mailto:varju.katalin@eli-alps.hu) with your cv and letter of motivation.

If you are interested in any of these positions and meet the required criteria, please fill in our Career Site with your professional data at <https://www.eli-alps.hu/en/Career> Please use "Early Stage Researcher: SHHG" or "Research Fellow: SHHG" in the subject of your e-mail definitely