

## PhD in experimental physics

The plasma group at HES-SO Valais is working on laboratory scale plasma reactors for various applications in industry. This project focusses on the **development of plasma reactors**, for the **conversion of mixed plastic waste into feedstock gases for the chemical industry**.

During the 4-year project plasma reactors will be designed, build, tested and optimized in parallel with simulations of the major processes occurring in the entire process. Plasma analysis include optical spectroscopy, power analysis or Langmuir probes. The composition and concentration of the generated gases will be done inline via FTIR, GC or MS. Solid residues will be analyzed for example via XRD, EDX, etc.

While the experimental part will be the main occupation, modeling of the electrical circuits and impedance calculations for power loss analysis will allow faster prototyping of improved versions and future upscaling to industrial scale demonstration. Finite element modeling of the plasma may lead to a better understanding of the chemical reactions and eventually to an optimization of the plastic conversion process in the plasma.

The candidate will work in the plasma laboratory with state-of-the-art equipment, in collaboration with electrical and mechanical workshops and together with the analytical platforms for material and chemical analysis at HES-SO and the neighboring EPFL. The project covers basic and applied research, requiring data acquisition, evaluation & management and release in an open science framework, with the prospect of patenting and publishing in leading journals and regular participation to conferences.

The successful candidate will integrate the doctoral school at EPFL, who must approve the engagement.

### Your profile

- Master in experimental physics, microtechnology or electrical engineering or related field.
- Experience with plasma, vacuum technology, spectroscopy, high frequency (RF) and design tools (CAD) is an advantage.
- Besides English, good language skills in French and/or German are a plus.
- Highly motivated with self-initiative, curiosity, appeal for novelty.
- Strong problem-solving attitude, well organized, with a strong scientific mindset and a good sense of initiative.
- Able to keep track of the results and to present science advancements, genuine interest in scientific writing.
- Good communicator and willing to supervise Bachelor/Master students.
- Team player, collaborative and keen to integrate into a multidisciplinary team.

**Employment** 100%

**Place of work** Sion, Switzerland

**Starting date** 1. October 2024, or according to mutual understanding.

For submission of your full application (CV, motivation letter, diplomas and certificates) or requesting further information please contact: [Christoph.Ellert@hevs.ch](mailto:Christoph.Ellert@hevs.ch).