universität freiburg

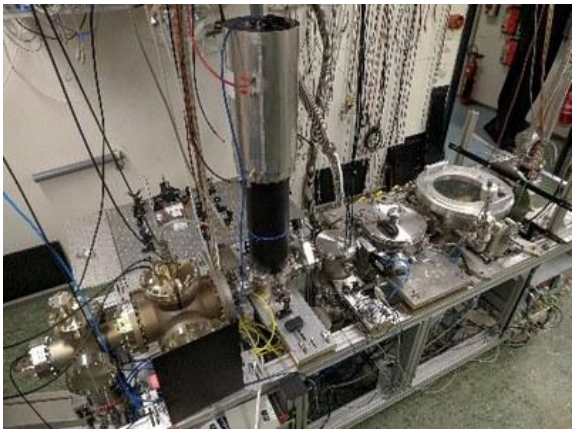
At the Institute of Physics, University of Freiburg, we are offering

PhD position (m/f/d)

on **Time-resolved XUV Photoelectron Photoion Coincidence Spectroscopy of Photocatalytic Water Splitting Reactions**

Time-resolved photoelectron spectroscopy is a powerful tool to study excited state dynamics of molecules [1]. Using extreme ultraviolet (XUV) radiation for ionization enables to directly observe the progress of photochemical reactions and photophysical processes from the initial states, all the way to the final products. The combination with coincidence detection of electron-ion pairs allows to extend these capabilities from isolated molecules to small molecular complexes [2,3]. We want to apply this novel combination of techniques to study model systems for photocatalytic water splitting, that have been proposed to directly convert solar energy into chemically usable form.

1. Scognamiglio, A., et al. *J. Chem. Phys.* **2024,** *161* (2)
2. Hartweg, S., et al. *Science* **2023,** *380* (6650)
3. Hartweg, S.,et al., *J. Phys. Chem. Lett.* **2023** 14 (15)



We are looking for a highly motivated PhD student to join our team. Candidates should have strong interest in optical and molecular physics, physical chemistry and building experimental setups. Experience in the use of ultrafast lasers and/or vacuum equipment as well as basic programming skills are advantageous. Good communication skills are needed.

Your task will be to design and build a XUV beamline based on the generation of high order harmonics (HHG) and a grating monochromator. You will couple this beamline to a photoelectron photoion coincidence spectrometer and conduct research on the relaxation and reaction dynamics of small optically-excited molecular clusters and complexes.

Applications should be sent as a **single pdf-file** including a letter of motivation, a CV, certificates of university degrees (with grades) and the contact details of at least two references. Please indicate the subject “PhD TR-PEPICO” in your email. Applications should be submitted until **June 30, 2025.** The position remains open until a suitable candidate is found.

Contact:

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The University of Freiburg seeks to increase the number of female scientific faculty members and therefore strongly encourages qualified women to apply. The university is committed to provide a family-friendly workplace. In case of equal qualification, persons with disabilities will be given preference.