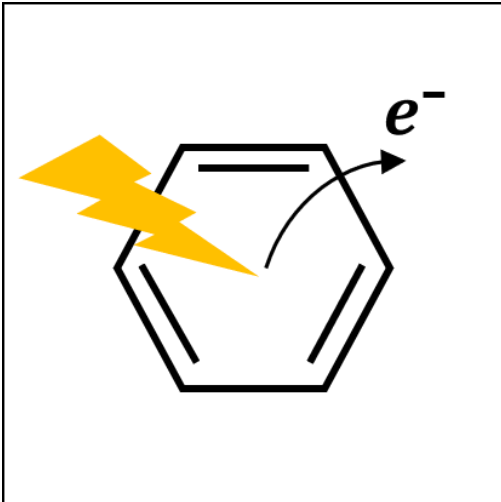


Postdoc Position in Multidimensional XUV Photoelectron Spectroscopy



Photochemical processes play a crucial role in nature. Yet, understanding the underlying molecular dynamics remains a challenge. The main difficulties comprise of the ultrafast time-scales of the dynamics paired with a complex interplay of many intra- and inter-molecular degrees of freedom. We will develop a unique experimental method to address these issues. To reduce the complexity of the system, single molecules and small functional units will be isolated in vacuum. The samples will be studied with a new spectroscopic concept combining ultrafast XUV photoelectron spectroscopy with interferometric and multidimensional methods (for preliminary work see [1–4]). As an advantage over established spectroscopic methods, this approach will provide a gap-less map-

ping of the molecular dynamics with high temporal and spectral resolution.

- [1] L. Bruder et al., J. Phys. B: At. Mol. Opt. Phys. **52**, 183501 (2019)
- [2] A. Wituschek et al., Nat Commun **11**, 883 (2020)
- [3] D. Uhl et al., Optica **8**, 1316 (2021).
- [4] U. Bangert et al., Nat Commun **13**, 3350 (2022).

The postdoctoral candidate will join a team of highly motivated researchers led by Lukas Bruder at the University of Freiburg. The team will build the new experimental apparatus and investigate prototypical photo-driven reactions ranging from isomerization reactions to intra/inter molecular energy and charge transfer processes. The main parts of the setup are: high harmonic generation (HHG) in gases, optical parametric amplifier and femtosecond pulse metrology, optical interferometers, photoelectron detector, molecular beam source. The postdoc will develop substantial parts of this setup, will be involved in the supervision of undergraduate and graduate students and will have the opportunity to develop and lead own research projects about ultrafast molecular photochemistry. **In particular, we are looking for candidates with experience in building complex experimental setups with a focus either on femtosecond pulse metrology or HHG or electron/ion detection.**

The postdoctoral candidate will benefit from an excellent research environment and the cross-disciplinary expertise in our group. We will in particular support the career development of the postdoctoral candidate. The position is open for 1 year with possible extension of up to 5 years. Applicants should have a PhD in physics, chemistry, optical engineering or related fields. Applications including a letter of motivation, a CV, certificates of your university degree (including grades) and contact details of two references should be sent in a **single** pdf file to the email address in the box. Please indicate the subject “Postdoc MULTIPLEX” in your email. The position remains open until a suitable candidate is found.

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