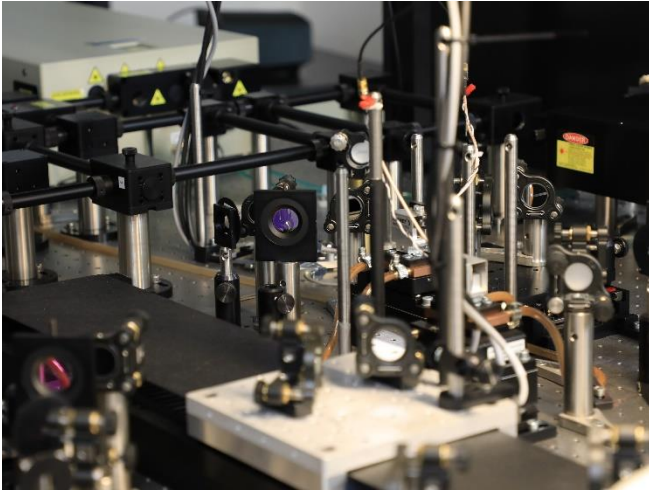




## Bachelor/Master Thesis: Experiments to study ultrafast molecular processes

in the research group of PD Lukas Bruder/AG Stienkemeier



Light-driven processes in molecules play a crucial role in nature. Examples are photosynthesis, photocatalysis and photovoltaics, which are central for the development of renewable energy sources. But also, photo-driven molecular processes involved in human vision or in the radiation damage of DNA are examples of high relevance in this research field. We are currently setting up a new laboratory where we develop new experimental methods to study such processes. This offers a great opportunity for Bachelor/Master students to get involved in this research and help developing our novel experimental method.

Possible projects are:

- Building an optical setup to generate ultrashort deep ultraviolet laser pulses. With this setup we will study the ultrafast dynamics of molecules absorbing in the UV spectral range. Important scientific questions are, for instance, the photoprotection mechanism in nucleobases forming the building blocks of DNA.
- Developing a new data acquisition scheme to substantially reduce measurement times and record more statistics, which will critically improve the sensitivity in our experiments. This will open-up new studies of functional molecular nanosystems, such as relevant in photovoltaics.
- Implementing a computer control of the laser polarization and study molecular enantiomers. These experiments aim at new insight into the L-enantiomer excess in nature related to the origin of life on our planet.

We are looking for students with interest in experimental atomic, molecular and optical physics. In particular, interest in optics and laser physics is important. Good communications skills are also required (english or german).

More information about our research group can be found on our website and on Instagram:

[www.nanophysics.uni-freiburg.de](http://www.nanophysics.uni-freiburg.de)



**If you are interested, send us an email:**

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