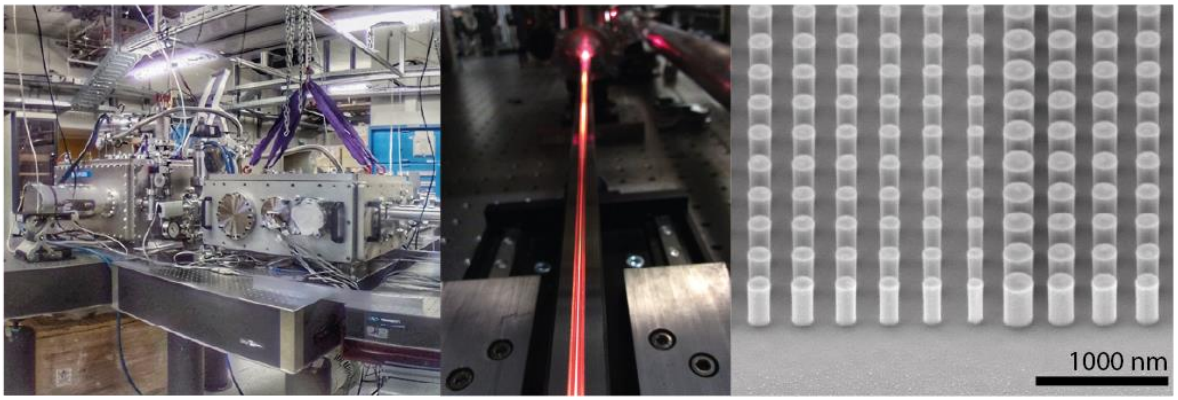
Ph.D. Position (female/male/diverse)

Realization of an Attosecond Microscope enabled by Metaoptics

30 hours/week, Graz University of Technology, Institute of Experimental Physics



Extreme Ultraviolet Beamline Ultrafast Laser Broadening Optical Metasurface

The newly established ERC-funded project EUVORAM at Graz University of Technology is searching for a motivated Ph.D. candidate (f/m/d) as soon as possible. As a successful candidate, you will implement a novel attosecond microscope with superb spatial and temporal resolution, which will allow following the interaction of light and real photonic nanodevices. This way, the microscope will generate insights central to developing the next generation of solar energy harvesting and photonic communication devices.

You will achieve this by applying state-of-the-art metasurfaces developed only last year in a collaboration between Graz University of Technology and Harvard University. These allow the realization of arbitrary optics for extreme-ultraviolet radiation for the first time. Metasurfaces are flat optics whose nanostructure determines their function. Extreme ultraviolet radiation is light with wavelengths between 10 and 121 nm.

As a student in a young group, you can assume a leading role in establishing the lab and its culture. Your work will start by setting up a laser-driven extreme-ultraviolet source and commissioning the attosecond microscope. Then you will be one of the first researchers to exploit its novel insights. In your multidisciplinary Ph.D., you will acquire skills in attosecond physics, extreme-ultraviolet photonics, and metaoptics, which are applicable beyond academia, e.g., to nanolithography and semiconductor fabrication.

Any Questions or unsure if this position is for you? Feel free to ask me anything (Marcus Ossiander, marcus.ossiander+app@tugraz.at). We will not consider inquiries preceding a formal application in the selection process.

We encourage applications by individuals from demographies underrepresented in physics: Graz University of Technology aims to increase the proportion of women and offers award-winning promotion of women (link); qualified female applicants are explicitly encouraged to apply. Graz University of Technology actively promotes diversity and equal opportunities; people with disabilities and relevant qualifications are expressly invited to apply.

We offer:

- work in cutting-edge photonics research with immediate societal applications and acquiring skills also highly desired by industrial employers

- possibility to learn about nano-optics, ultrafast science, microscopy, and solid-state physics
- fully funded position
- international and national collaborations
- finding a second (international or female) mentor if desired

Duties and Responsibilities:
- design, construction, and commissioning of an extreme-ultraviolet beamline and microscope
- research in metaoptics, high-harmonic generation, extreme-ultraviolet imaging
- work in, maintain, and build new collaborations
- communication of results in manuscripts and at conferences

Desired Qualifications:
- good social skills and effortless communication in English, willingness to learn German
- solid understanding of basic optics and atomic physics
- programming experience (any language)
- high level of curiosity, collaboration, independence, and motivation

Formal Requirements:
- completed master or diploma in physics, electrical engineering, or similar. Preferably with a focus on imaging, ultrafast photonics, or nanofabrication.

Salary:
- we offer a 3-year position with an annual gross salary of 32.115 €, based on a 30 h/week (75%) workload. Extensions are possible in case of extraordinary, e.g., familial, circumstances.

Application Materials:
- curriculum vitae
- an English piece of text written by you (e.g., thesis, university homework assignment, publication; not necessarily scientific)
- name and email address of one reference

Contact:
- We look forward to receiving your English or German application via email at marcus.ossiander+app@tugraz.at. Applications will be reviewed on a rolling basis starting February 20, 2023, until the filling of the position.