

The Institute of Environmental Physics (IUP) at the University of Bremen offers the following position – under the condition of job release – at the earliest possible date:

PhD position (f/m/d)

German federal pay scale E 13 TV-L (65 %) limited for 3 years

for the research project

Application of an imaging DOAS instrument for measurements of trace gases at shipping routes and further emission sources

Nitrogen dioxide (NO₂) is a trace gas harmful to human health. NO₂ is abundant in the atmosphere in cities and in emission plumes of, e.g., power plants, industrial estates, shipping routes or airports. Numerous kinds of respiratory diseases are caused by air pollution. In addition, nitrogen oxides influence the chemistry of the atmosphere and play an important role, e.g., in the formation of surface layer ozone smog.

Although plenty of NO₂ measurements are performed, some relevant aspects are not yet understood well enough. These include spatial and temporal distributions in cities as well as the determination of emissions from relevant sources. Amongst others, the shipping sector including cruise ships and container vessels plays an increasingly important role for emissions in marine areas, which are not yet sufficiently quantified.

One important measurement method for the determination of trace gases such as NO₂ in the atmosphere is Differential Optical Absorption Spectroscopy (DOAS). Imaging DOAS systems, which measure into different viewing directions simultaneously, provide the prerequisite to determine spatial trace gas distributions around chosen locations at good temporal resolution.

At the Institute of Environmental Physics of the University of Bremen, an imaging DOAS system has been developed, which has already been applied from ground and from a ship-based platform. In the framework of the current project, this instrument shall be developed further and shall be applied intensively for trace gas measurements at shipping routes, e.g., at the entrance to the Hamburg harbour, and at other relevant sources. The results shall be interpreted with respect to the spatial and temporal trace gas distribution and the underlying sources.

Responsibilities of the successful candidate include optimisation of the instrument and the measurement process, deployment and operation of the instrument at selected sites, as well as analysis of the measurements and interpretation of the results. The findings can be used in order to draw comparisons to model results and emission data bases, and potentially also to improve these models and data bases. The research activities are linked to other national and international research programmes.

Requirements:

- Completed scientific university studies (Master in Physics, Environmental Physics, or Meteorology) with an average grade better than 2,0 in the German system or B in the Anglo-Saxon system.
- Experimental skill and interest in conducting measurement campaigns
- Strong interest in physics and chemistry of the atmosphere
- Good knowledge in at least one programming language, preferably Python
- Good knowledge in German and/or English language (written and spoken)
- Good knowledge in the following areas is a benefit: optics and spectroscopy, computer-based instrument control, physics and chemistry of the atmosphere, meteorology, remote sensing of the Earth

The Institute of Environmental Physics offers a good working atmosphere and direct involvement in international research, as well as advanced facilities.

The University of Bremen is a family-friendly workplace, versatile, and is an international university. Therefore, we welcome all applicants, irrespective of their gender, nationality, ethnic and social origin, religion and philosophy of life, disabilities, age, sexual orientation and identity.

The University of Bremen seeks to increase the percentage of females in science and therefore especially encourages women to apply. Severely disabled persons will be favoured in the case of essentially equal professional and personal aptitude.

Further information can be found on the institute webpage: <http://www.iup.physik.uni-bremen.de>.

Information about the DOAS working group can be found here: <http://www.doas-bremen.de>.

Please send your application documents (cover letter, CV and copies of your certificates and diploma, including the certificate of qualification for university matriculation, e.g., German Abitur, or comparable) until May 20th, providing tender offer code **A177-24** compiled into a PDF file – via email to Dr. Anja Schönhardt schoenhardt@iup.physik.uni-bremen.de.