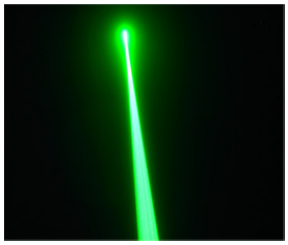
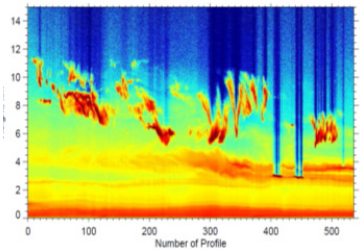
PhD Studentship in Atmospheric Physics



Center for Atmospheric and Instrumentation Research, School of Physics, Astronomy and Mathematics and

University of Hertfordshire, United Kingdom



The School of Physics, Astronomy, and Mathematics offers a PhD studentship in the area of atmospheric physics and air pollution measurements. The successful applicant will work with laser spectroscopic methods that aim at identifying chemical components in atmospheric air pollution (aerosol particles and gases). The results of this work will be the basis for developing novel measurements channels for so-called LIDAR (LIght Detection And Ranging) instruments that are used in climate and environmental studies. LIDAR instruments are used for the vertically resolved characterization of optical and microphysical properties of atmospheric pollution. One missing link in the application of these instruments is that the identification of the chemical components of aerosols, like sulfuric acid, nitrous oxides, and soot, is still in its infancy. First tests that aimed at identifying silicon dioxide in mineral dust were successful with our external laboratory in South Korea. Our main laboratory at the University of Hertfordshire will be used for developing this novel methodology to a considerably broader field of applications in climate research, air quality monitoring, and health risk assessment. The main methods will be Raman spectroscopy and laser fluorescence methods. We will use high-power lasers, gas cells and single particle levitation techniques in conjunction with simulation studies with computer software.

The PhD work will consist of theoretical and experimental work in the field of Raman scattering from particles and gases. Theoretical studies are intended to design laboratory experiments suitable for investigating the ability to identify the chemical components in aerosols and gases. Experimental work will be used to verify the theoretical studies and to improve/modify the experimental set-up.

The applicant will work in the Centre for Atmospheric and Instrumentation Research (CAIR, http://strc.herts.ac.uk/cair). She/he will be supported by an international team of highly experienced staff with a strong background in laser physics, remote sensing of atmospheric pollution, and atmospheric physics. UH also operates a high-performance computing facility (http://stri-cluster.herts.ac.uk). The applicant should have strong interest in experimental work and knowledge (or already worked) with lasers and optical components, and some background knowledge of the physical principles of molecular physics. Computer programming skills would be of advantage. The laboratory has strong links to research institutes in the USA (NASA), Europe, and East Asia (South Korea).

The studentship is funded for a period of three years and covers tuition fees and an annual stipend of 13,726 GBP p.a. for UK or EU candidates. The studentship comes with a computing and travel budget of 2000 GBP per year, extendable where need can be demonstrated. Non-EU overseas applicants will be eligible to receive the stipend but will have to contribute 5,575 GBP p.a. to their tuition fees.

How to apply

Applicants are invited to apply before 31 August 2013. Further information on the topic of the work and the research environment in the School can be obtained from the principal investigator, Dr. Detlef Müller, Reader in Physics and Royal Society Wolfson Merit Award recipient, email: d.mueller@herts.ac.uk

Further information on the application process can be obtained from Lorraine Nicholls, email: L.Nicholls@herts.ac.uk; see also http://strc.herts.ac.uk/ls/