



## **NERC industrial PhD studentship - Optical properties of atmospheric aerosol measured by laser tweezers**

Supervisors: Martin D. King (Royal Holloway University of London) and Andrew D. Ward (Rutherford-Appleton Laboratory)

### **Project Summary**

**You will work in the Rutherford-Appleton laboratory using Laser Tweezers to capture and measure the optical properties of atmospheric aerosol sampled from the atmosphere. You will model your measured optical properties in atmospheric models to calculate the warming or cooling contribution to modern climate change.**

Particulate matter in the atmosphere effects the radiative balance of the planet directly and indirectly. Directly, by scattering and absorbing solar radiation, and indirectly, by acting as cloud condensation nuclei. The scattering and absorption cross-sections of a homogeneously pure aerosol can be calculated by solving Mie theory and depends on the refractive index, density and size. Increasing the refractive index of an aerosol, will tend to increase the cooling effect (and vice-versa for decreasing the refractive index). The real component of atmospheric aged particles is considered to be in the range 1.35–1.56..

You will spend the majority of your time at Rutherford-Appleton Laboratory (Oxfordshire) and submit a thesis by concurrent publication (your collected published papers) You will collect and extract atmospheric aerosol from filter samples and measure the refractive index on the laser tweezers system. The student is expected to present their results at international conferences and attend international schools in atmospheric science and optics. The studentship represents an amazing opportunity for a chemist or physicist to develop interdisciplinary skills on bleeding edge techniques at an internationally renowned facility.

Interested – please contact Martin King (01784 414048, [m.king@rhul.ac.uk](mailto:m.king@rhul.ac.uk)) for further discussions. Applications will be through the University of London Doctoral Training partnership (<http://london-nerc-dtp.org>) in due course

Eligibility for this studentship is restricted to UK citizens and applicants who have been ordinarily resident in the UK throughout the 3-year period preceding the date of application for an award, and has settled status in the UK within the meaning of the Immigration Act 1971 (ie is not subject to any restriction on the period for which he/she may stay). Further information can be found from the Science Technology Facilities Research Council.

*Details on how to apply can be found here [www.rhul.ac.uk/studyhere/postgraduate/applying](http://www.rhul.ac.uk/studyhere/postgraduate/applying)*

*Please contact the Postgraduate Programmes Co-ordinator, if you have additional questions about the department or application procedures (email: [pgadmin@es.rhul.ac.uk](mailto:pgadmin@es.rhul.ac.uk) ; fax: 01784-471780; tel: 01784-443581).*

*Applicants are requested to send an additional copy of their CV directly to the lead supervisor of the project in which they are interested. Please also contact the supervisor if you have any questions about the project itself*