

**UNIVERSITY OF BIRMINGHAM  
SCHOOL OF GEOGRAPHY, EARTH & ENVIRONMENTAL SCIENCES**

**Project Title:**

Calculating Pollutant Lung Dose for Use in Health Exposure Studies

First supervisor: Roy M. Harrison

Second supervisor: Juana Maria Delgado Saborit

**Closing date: 23<sup>rd</sup> November 2012**

**Interview date: 7<sup>th</sup> November 2012**

**Project Description**

A Research Associate position is available from January 2013 onwards for 36 months to work on the project entitled "Calculating Pollutant Lung Dose for Use in Health Exposure Studies". This Early Stage Researcher position is funded by the European Union as part of the HEXACOMM – Human EXposure to Aerosol Contaminants in Modern Microenvironments Marie Curie Initial Training Network. The main research goal of HEXACOMM is to apply scientifically-based modelling and experimental methods to relate concentrations of particulate matter in the indoor domestic environment to its sources and human exposure implications.

In the case of airborne particulate matter, the lung deposition efficiency is highly dependent upon the particle size distribution both for deposition in individual regions of the respiratory system (i.e., extra-thoracic, tracheo-bronchial and alveolar regions) as well as the whole lung. There have been many theoretical and experimental studies of the deposition of particles of known size in the human respiratory system and knowledge of deposition efficiency disaggregated according to age, sex, level of activity etc is generally good. However, this information needs to be combined with information on the size distribution of airborne particulate matter for which appropriate measurements are relatively scarce.

The project will be concerned with the measurement of particle size distributions both for particle number and specific chemical components, and with the merging of SMPS and APS distributions into single coherent size distributions and their use to calculate lung dose. The project will also be concerned with the disaggregation of size distributions to infer the contributions of different source types to measured particle loadings with a view to evaluating the lung dose due to specific chemical components and specific particle sources.

Subject areas:

Chemical Sciences

Environmental chemistry

Physical chemistry

Physical Sciences

Atmospheric physics

Earth Sciences

Environmental science

This PhD is competition funded for non-UK students only, and applicants should apply either via the Birmingham jobs site - <http://www.hr.bham.ac.uk/jobs> (using job ref. 47530) or via <http://www.jobs.ac.uk/job/AFO063/marie-curie-early-stage-researcher/>.