

ARIES DLA CASE-FUNDED COMPETITIVE PHD STUDENTSHIP WITH THE NATIONAL PHYSICAL LABORATORY

Source attribution of atmospheric contamination using non-traditional isotopes

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Scientific background

Identifying sources of atmospheric particulate pollution is essential to inform effective mitigation strategies. Trace metal isotope ratios have the potential to fingerprint the source of particulates emitted by industrial processes but require high-precision analyses of small amounts of sample material to extract this information.

Research methodology

In this project, you will work with a team at Royal Holloway University of London and the National Physical Laboratory (NPL) in London to measure the lead and nickel isotope compositions of atmospheric particulates in the UK, with the intention of characterising the source of these emissions, and their spatial distributions. NPL coordinates an ongoing air quality monitoring network for heavy metals at 23 sites across the UK, and you will have access to several years' worth of archived filtered particulate sample material. Samples will be chemically prepared and measured using multi-collector ICP-MS at the world-class trace metal laboratories at Royal Holloway with source attribution using atmospheric dispersal modelling.

Training

You will be trained in sample handling, chemical purification techniques, mass spectrometry and atmospheric modelling for source attribution. You will be based at RHUL but will spend time with the project's CASE sponsor NPL at Teddington in West London where you will engage with the wider monitoring network in the UK and Europe to learn about the policy implications of your work. NPL is the UK's National Measurement Institute, a world-leading centre of excellence in developing and applying the most accurate measurement standards and methods. The Air Quality and Aerosol Metrology Group at NPL develops and maintains the nation's primary measurement standards for determining the chemical and physical properties of airborne particulate matter and operates three of the UK's ambient air quality networks.

Person specification

We are looking for an individual who is enthusiastic about laboratory work with strong numerical skills and an appetite to contribute to environmental solutions in the UK and abroad.

ARIES is awaiting confirmation of funding under the BBSRC-NERC DLA award scheme, which is expected shortly. Funding for this studentship is subject to this confirmation and [UKRI terms and conditions](#)