Imperial College London

Department of Materials and Department of Chemistry

Multiscale characterisation of 2D nanomaterials in the environment for assessment of their potential hazards

Duration: 48 months

Supervisors: Dr Alex Porter, (Department of Materials)
Supervisor: Professor Milo Shaffer, (Departments of Chemistry and Materials)

We are inviting applications for a fully funded 4-year PhD project in the area of advanced characterisation and environmental toxicology in the research groups of Dr Alexandra E. Porter and Professor Milo Shaffer in the Departments of Materials and Chemistry at Imperial College London. This funding stream is available for UK citizens and EU nationals who have spent the last five years in the UK. The studentship will cover tuition fees plus the standard maintenance stipend of £16,296 per year (this year’s rate).

Engineered nanomaterials (ENMs) can have extraordinary intrinsic properties and have aroused enormous interest in both their fundamental scientific behaviour and potential technological applications. However, before widespread implementation, it is critical to understand the potential fate and behaviour of ENMs if released into the environment, either accidentally or deliberately. In particularly, it is important to understand how the ENMs can affect microorganisms in stream sediments and soils. This project will assess the potential environmental hazards of 2D nanomaterials, such as graphene and graphene oxide, which have been mooted for a wide range of applications, including those intrinsically involving environmental exposure, such as water treatment. You will join dynamic multidisciplinary research teams that have pioneered the use of nanoanalytical characterisation techniques to detect carbon nanomaterials in complex environmental media. The project will combine cutting edge characterization techniques with advanced materials synthesis to reveal the underlying pathways for the evolution and influence of these materials as they partition through a waste water treatment plant to the environment to stream sediments and hydrated soils. The student will also assess how these materials interact with microbial organisms and the resulting toxicological effects on ecosystems.

Imperial College has unique instrumentation and expertise in state of the art 2D nanomaterials synthesis, characterisation and analytical environmental scanning electron microscopy. The project will use these unique technologies to detect these commercially relevant classes of nanomaterials in their near-native state in the environment. The student will also undertake a training programme at UCL and Imperial College London, as a member of the Centre for Doctoral Training in Advanced Characterisation of Materials and will take part workshops organised by the Lloyds International Consortium in Nanotechnology.

We seek candidates for January 2017 application cycle, for an October 2017 start. You will hold, or be expected to achieve, a Master’s degree in addition to a Bachelor’s degree (or equivalent) at 2:1 level (or above) in a relevant subject (e.g. Physics, Chemistry, Materials, or Engineering).

How to apply:
Applications will be handled in two stages:

Stage 1: Send a full CV, including the marks (%) for all (undergraduate) modules completed to date and including a clear description of previous research project experience, as well as a covering letter and contact details of two academic referees, to Dr. Alexandra Porter (a.porter@imperial.ac.uk). Applications that do not provide this information cannot be considered.
Stage 2: Suitable applicants will be interviewed, and if successful invited to make a formal application.

The prospectus, entry requirements and application form (under ‘how to apply’) are available at: http://www.imperial.ac.uk/pgprospectus

Closing date: one month from placement

*Imperial Managers lead by example.*

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people.