Research Associate in Water Engineering

Job Ref: REQ240305

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

About the School of Architecture Building and Civil Engineering

Research and teaching in the School of Architecture Building and Civil Engineering is driven by 80 academic staff, 34 technical and clerical support staff, 40 contract researchers and over 120 doctoral students. The School benefits by having academic staff from a wide variety of backgrounds, with a resulting rich diversity of perspectives. The undergraduate programmes include Architecture, Civil Engineering, Construction Engineering Management, Commercial Management and Quantity Surveying, Architectural Engineering and Design Management, Air Transport Management, and Transport and Business Management. In all courses, the academic content is directly aligned to the needs of the industry and there is a high level of sponsorship in our portfolio of programmes. Our record of graduate employment is second to none and we have been ranked 1st or 2nd in the National Student Survey for the last 6 years. Further information is available at: http://www.lboro.ac.uk/departments/abce/

The School of Architecture, Building and Civil Engineering delivers zero-carbon, resilient buildings, infrastructure and cities in a world under pressure from rising urban populations, ageing infrastructure, resource constraints and multiple hazards. In the 2021 Research Excellence Framework (REF), Loughborough University ranked second place for Architecture, Built Environment and Planning and the research undertaken in the School was rated 'world-leading'. The international standing of our research is exemplified by our growing portfolio of collaborations with other leading universities and research institutes worldwide. These include: the UNSW Sydney, University of California at Berkeley, MIT, Chongqing, Hong Kong, Iowa State, Oklahoma State, RMIT, Georgia State and Penn State.

We are equally proud of our collaborations with industry such as HS2, Mace, Skanska, Aecom, Arup, Willmott Dixon, BRE, Anglia Water and many others, as well as influential organisations such as the Construction Leadership Council (CLC), Constructing Excellence, BSI and others. Built Environment research is increasingly informing government policy through, for example, the Department for Business, Energy and Industrial Strategy and The Committee on Climate Change, and working with for organisations such as the NHS, HS2, Network Rail and others. For more on our research go to: http://www.lboro.ac.uk/departments/abce/research/

Project Description

The newly funded EU HORIZON project "Safe and Sustainable by Design Framework for the Next Generation of Chemicals and Materials (SSbD4ChEM)" will run Jan 2024-Dec 2027 and it includes 19 European academic and industrial partners.

Developing new chemicals and materials requires compliance with various regulations and standards that can vary by region and country, making it difficult to create a standardised approach to safe and sustainable design. Even though access to information on chemicals, their toxicological properties and their presence in the environment has improved significantly through Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), the Information Platform for Chemical Monitoring (IPCHEM), the Life Cycle Data Network, and the efforts of the European Environment Agency (EEA), the lack of data at present remains a challenge for scientists, risk assessors, and risk managers who rely on accurate and comprehensive information to make informed decisions about the risks associated with chemicals.

The strategic goal of SSbD4CheM is to introduce screening and testing methods for safe- and sustainable material development in three relevant demonstrators being textile, automotive and cosmetics industry. The demonstrators will be the starting point for further implementation and standardization of the new methods. The materials/chemicals of the demonstrators include PFAS-free textile coatings and natural fibres in different composite materials. Screening and testing methods focus on I) physicochemical characterization with volatile organic compounds, non-uniform particles and composition of the material, as well as II) risk assessment with exposure and hazard assessment and *III)* in silico prediction tools to reduce experimental delay. For each of the demonstrators an SSbD assessment is performed which will be fed with existing data and newly determined data based on the demonstrators.

The Loughborough researcher will work on identification of emission sources and estimation of emissions within the "Exposure assessment/risk management" work package. Sample preparation and measurements will be developed to detect, identify, and quantify micro- and nanosizedparticles emitted from textile and automotive products to water and air. The nature and magnitude of exposure, including the routes of exposure (inhalation, dermal) and medium (wastewater and air) will be investigated. Different steps in the life cycle of textile materials (production, factory wash, wash by end user) will be monitored and emissions to water and air will be investigated through collection on dedicated membranes. They will develop of a small filter to enable rapid sampling of nanoparticles from water and air, which can be patented and used in various industries (product development/license)

Researcher will be supervised by the Loughborough-based project co-investigator. They are expected to be in frequent contact with other work package- and project-partners.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose
To conduct research in the area of Identification of emission sources and estimation of emissions of micro- and nanosizedparticles/ To be responsible for development of filter to enable rapid sampling of nanoparticles from water and air/ To undertake primary data collection, sample preparation and measurements to detect, identify, and quantify micro- and nanosizedparticles emitted from textile and automotive products to water and air./ To use extensive instrumental analysis of the collected samples and to work on development of new methodology.

Job Duties

- To become familiar with the project team, project objectives and the analytical methods required for running experimental work.
- To develop a methodology for rapid sampling of nanoparticles from water and air.
- To run various instrumental analysis and process data.
- To develop methodology for nanoparticle-sample collection and characterization.
- To travel to international partners for sample collection and analytical method optimizations.
- To work collaboratively and effectively communicate research results with project partners
- Be responsible for conducting the day-to-day running of the project.
- To formulate detailed plans for the project based on broad guidance from the project team.
- To feed back to the project team on progress, to make recommendations for next steps.
- Write up regular progress reports and present outcomes to all Investigators and Collaborators.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- To support the project team by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.

- To write research papers suitable for publication in high quality academic journals.
- To attend and contribute to conferences.
- To contribute to project promotion and public engagement events.
- Contribute ideas for new research and enterprise directions.
- Maintain confidentiality at all times and ensure that intellectual property (IPR) agreements are not violated.
- To assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day-today supervision and support of other researchers.
- Where appropriate, to deliver teaching, tutorial and laboratory sessions to students.
- Engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.
- Undertake other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equity & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to Tanja Radu

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application
2 – Test/Assessment Centre/Presentation
3 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Background in Analytical Chemistry, Chemical/Water Engineering	1,3
	Experience of sample preparation and running most of the following equipment: FTIR, GC-MS, LC-MS, ICP-MS, SEM and Light Microscopy	1,3
	Experience of analytical method development	1,3
	Developing testing protocols for material characterisation.	1,3
	Experience of nanoparticle/nanoplastics detection, sampling and characterisation	1,3
	Authoring original work for academic journal papers, conference papers or technical reports	1
Skills and abilities	Ability to undertake the duties and responsibilities of the post	1,3
	Excellent written and oral communication skills	1,3
	Self-motivated with ability to meet deadlines	1,3
	Excellent interpersonal, and organisational skills	1,3
	Working knowledge of instrumental analysis (as above) and data interpretation	1,3
	Ability to work collaboratively	1,3
	Ability to write project reports and make technical presentations to industrial and academic research groups	1
	Knowledge of relevant Health & Safety issues	1
Training	Willingness to undertake appropriate further training and to adopt new procedures as and when required	1
Qualifications	PhD in Analytical Chemistry, Chemical/Water Engineering	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	1,3
	Willingness to travel/ Able to travel Independently (national and international travel)	3

Desirable Criteria

Area	Criteria	Stage
Experience	Experience in Thermal GC-MS methods is highly preferable (TGA-GC-MS, TD-GC-MS, Pyro-GC-MS).	1,3
	Developing proposals for funding from external agencies	1,3

	Working in a high quality academic research environment	1
Skills and abilities	Demonstrated ability to author original work, in the highest quality refereed academic journals	1
	A strong publication track record	1
	Report-writing skills	1,3
Qualifications	PhD in Analytical Chemistry, Chemical/Water Engineering	1
Other	Occasional Travel	3

Conditions of Service

The position is FULL TIME and FIXED TERM. Salary will be on Specialist and Supporting Academic (Research) Grade 6, £33,966 to £44,263 per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for STAFF GRADES 6 AND ABOVE, details of which can be found here.

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which can be found here.

The University offers a wide range of employee benefits which can be found here.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html

In addition, the University is supportive, wherever possible, of flexible working arrangements.
We also strive to create a culture that supports equity and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see http://www.lboro.ac.uk/services/hr/athena-swan/