School of Social Sciences and Humanities

Research Associate in *Tyre Emissions – Transmission HEI-PET: Health and Environmental Impacts of Particulate Emissions from Automotive Tyres*

Job Ref: REQ260383

Project Description

The HEI-PET project is a two-year interdisciplinary UKRI cross research council project funded by AHRC, BBSRC, EPSRC, ESRC, MRC, NERC and STFC. The project aims to understand the effects of tyre particulates on people and places, by developing a holistic interdisciplinary experimental approach to quantify particulate impacts as a function of tyre state and road surface characteristics. By integrating knowledge from engineering, biological and environmental sciences in both the design of these experiments and the analysis of experimental data, key factors will be identified linking particulate characteristics to both tyre operating conditions and their health/environmental impacts. The results of the project will help guide policies for effectively mitigating the impact of tyre wear matter on the environment and its inhabitants.

Job Description

Job Family and Grade: Specialist and Supporting Academic Grade 6

Job Purpose

We are looking for an ambitious Postdoctoral Research Associate who would like to contribute to the team's development of a revolutionary interdisciplinary approach to tyre particulate generation, collection and characterisation. This 22-month post will focus on the development of new methods to study environmental transmission and evolution of tyre particulates once they are generated from a car tyre or from existing road debris. Working as part of an interdisciplinary research team, the successful candidate will develop and deploy a novel experimental campaign to investigate tyre transmission pathways to the environment. This will consider tyre emissions generated by a rolling tyre and the remobilisation of tyre wear particles deposited on the road surface. This will involve developing outdoor experiments in partnership with the project's engineering team, and conducting laboratory-based particulate aging studies with its microbiology team. The researcher will also work closely with the rest of the project team to establish links between particle characteristics and their environmental/health impact.

Job Duties

- To become familiar with the literature around automotive tyre wear and particulate emissions.
- To develop a novel experimental campaign to study tyre particulate transmission pathways.
- To become familiar with particle measurement systems, air quality measurement sensors and their limitations.
- To collect tyre emissions samples from field testing.
- To characterise particulates both in terms of morphology and chemical composition.
- To summarise the cooccurrence of tyre wear particles with other road-sourced pollutants and consider their interactions.
- To be responsible for handling of PM particles, including study, documentation and disposal.
- To validate particulate transmission paths from tyre / road to nearby sensitive receptors.
- To produce simplified mathematical models of the dispersion, using Python / Matlab.
- Be responsible for the advancement of the multi-disciplinary research, resulting in significant contributions to journal papers and conference presentations.
- To lead in writing up research findings for dissemination amongst the research team and broader national and international community

- To formulate detailed plans for the project based on broad guidance from the project team.
- To work closely with the other members of the project team as required by the interdisciplinary nature of the project.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- 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 BSc, 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 Research Associate, the Project and 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 outlined in the document.

Organisational Responsibility

Reports to Dr Thomas Stanton, Department of Geography and Environment, and Dr Dan O'Boy, Aeronautical and Automotive Engineering Department at Loughborough University.

Person Specification

Your application will be assessed based on the essential and desirable criteria listed below.

Applicants are strongly encouraged to explicitly demonstrate how they meet each essential (and desirable) criteria at the application stage. The criteria that you need to demonstrate in your application will be listed as Stage 1 in the table below.

Stages of assessment are as follows:

1 – Criteria measured at Application
2 – Criteria measured at Test/Assessment Centre/Presentation
3 - Criteria measured at Interview

Essential Criteria

Area	Criteria	Stage
Experience	Background in Geography, Environmental Science or related discipline	1, 2, 3
	Authoring original work for academic journal papers, conference papers or technical reports	1
Skills and abilities	Excellent written and oral communication skills	2, 3
	Self-motivated with ability to meet deadlines	3
	Excellent interpersonal, and organisational skills	2, 3
	Ability to write project reports and make technical presentations to industrial and academic research groups	1, 2
	Knowledge of relevant Health & Safety issues	3
Training	Demonstrate evidence of having undertaken further training	1
Qualifications	PhD (or near completion) in relevant discipline.	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	1, 3
	Desire/preparedness to work in an interdisciplinary group and expand knowledge into new areas such as microbiology and engineering.	3

Desirable Criteria

Area	Criteria	Stage
Experience	Experience in typical chemical characterisation techniques (e.g. spectroscopic methods)	1, 3
	Experience characterising microplastics and particulates using imaging techniques (optical and electron microscopy)	1, 3
	Developing proposals for funding from external agencies	1, 3
	Working in a high-quality academic research environment	1, 3
	Experience of teaching and / or supervision of students in relevant areas	1, 3
Skills and abilities	Knowledge of Materials characterisation methods	1, 3
	A strong publication track record	1
Other	Able to travel Independently	3

Conditions of Service

The appointment will be subject to the University's Terms and Conditions of Employment relevant to the job grade.

Shared University Responsibilities

As a member of the Loughborough community, you are expected to:

- Take reasonable care of yourself, others and the environment, and to prevent harm by your acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Sustainability Policies & Procedures.

- Support and contribute to the University's commitment to principles of equity, diversity and inclusion (EDI) while carrying out all duties, behaving in a manner that treats others with dignity and respect and upholds every persons right to lawful freedom of expression, freedom of speech and academic freedom. Further information about EDI at Loughborough and our strategic aims is available on our website.

Our Purpose, Vision, and Values

Our purpose, Vision and Values underpin all that we do and shape how we work together at Loughborough.

We're proud to promote our values: **Adventurous**, **Collaborative**, **Creative**, **Authentic** and **Responsible**. Our people bring these values to life every day, and they are central to the positive and supportive culture that makes Loughborough unique.

If you join us, you'll be encouraged to bring these values to life in your own work and contribute to the positive, supportive culture that makes Loughborough unique.

Read more about our **vision and values**.

Our Accreditations

We strive to create a culture that supports equality 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.

We are proud to be a Race Equality Charter Member. The Charter aims to improve the representation, progression and success of all minority ethnic staff and students within higher education and address issues of racism within higher education institutions (HEIs).

We are proud to be a Disability Confident Employer and have adopted a proactive approach to employing disabled people and to creating a more diverse workforce. We ensure that our recruitment processes are inclusive and accessible. We guarantee to offer an interview to all applicants who have declared themselves with a disability, provided they meet the essential criteria for a role. We proactively anticipate and provide reasonable adjustments and support existing employees who acquire a disability or long-term condition to thrive in the workplace.

We are a real living wage employer, and our Living Wage Employer Mark shows our commitment to paying our staff according to the cost of living.

We are proud supporters of the City of Sanctuary movement and delighted to be recognised as a University of Sanctuary. This national network brings together, university staff, lecturers, academics and students, who together work to make Higher Education institutions place of safety, solidarity and empowerment for people seeking sanctuary.

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.