

Research Role Profile

Job Title:	Research Fellow (1A)
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Responsible to:	Head of research group, or principal investigator
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Responsible for:	Not applicable
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Job Summary and Purpose:
To undertake research in accordance with the specified research project(s) under the supervision of the principal investigator.

Main Responsibilities/Activities
<p>To undertake a range of research activities within a specified research area, assuming responsibility for specific areas of projects and making use of new research techniques and methods, in consultation with the research award holder or supervisor. This may include fieldwork, interviews, laboratory experimentation, critical evaluation and interpretation, computer-based data analysis and evaluation or library research.</p> <p>Using initiative and creativity to identify areas for research develop new research methods and extend the research portfolio. Analysing and interpreting results of own research. Write up results and prepare papers for submission to appropriate journals and conferences, and other outputs as required and/or appropriate. Attend appropriate conferences for the purpose of disseminating research results of personal development. The post holder may also contribute to writing bids for research grants and will contribute to collaborative decision making with colleagues in areas of research.</p> <p>Continually to update knowledge and develop skills, and translate knowledge of advances in the area into research activity.</p> <p>To plan and manage own research activity in collaboration with others. To carry out administrative tasks associated with specified research funding, for example risk assessment of research activities, organisation of project meetings and documentation. Implementation of procedures required to ensure accurate and timely formal reporting and financial control.</p> <p>To contribute to teaching in the Faculty by carrying out student supervision and/or demonstrating within the post holder's area of expertise and under the direct guidance of a member of departmental academic staff, as appropriate.</p> <p>The post holder may occasionally be required to supervise more junior research staff.</p>

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Person Specification

The post holder must have:

A doctoral degree in a relevant discipline (although individuals who have almost completed a doctoral degree may be appointed). Consideration may also be given to individuals who do not hold a doctoral degree but have required skills based on a number of years experience in specified / relevant fields.

The post holder will have authority over some aspects of project work and must be capable of providing academic judgement, offering original and creative thoughts and be able to interpret and analyse results.

Relationships and Contacts

Direct responsibility to the principal investigator or academic supervisor. The post holder may be asked to serve on a relevant Faculty committee. There may be additional reporting and liaison responsibilities to external funding bodies or sponsors. The post holder may work on original research tasks with colleagues in other institutions.

Special Requirements

To be available to participate in fieldwork as required by the specified research project

All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities policy.
- Help maintain a safe working environment by:
 - Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand
 - Following local codes of safe working practices and the University of Surrey Health and Safety Policy
- Undertake such other duties within the scope of the post as may be requested by your Manager.

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ADDENDUM

Job Title:	GCARE Research Fellow in Air Pollution Modelling
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Main Responsibilities/Activities

This information sheet should be read in conjunction with the accompanying generic Research Fellow (1A) Role Profile and will be used for shortlisting processes. More specifically the post holder will be expected to:

- be responsible for the day to day management of project activities including measurements, modelling, regular communication, preparing and delivering presentations, reports and project deliverables besides supporting the financial management of the project
- be responsible for **project modelling activities as well as planning, designing and performing the field experimental campaigns and** in collaboration with project partners and the GCARE team
- be self-driven and independent enough **to log, clean, share, assess, interpret** the collected data and results to publish in top-ranked journals and write any associated reports.
- be part of a team to interact and manage his/her own research and **work with other team members** of the research group and the **consortium members**.
- be **delivering the tasks with the highest possible quality on agreed time scale**.

Person Specification

In addition to the criteria outlined in the accompanying generic Research Fellow (1A) Role Profile, the post holder should have (E = Essential; D = Desirable):

- PhD degree (or who will receive a PhD degree shortly by January 2019) in the fields of civil engineering, mechanical engineering, environmental engineering/science, computer, chemical engineering, transportation engineering, or related engineering/science disciplines (**E**).
- Expertise in handling air pollution instruments, data collection methods, and its subsequent analysis and interpretation using advanced mathematical/statistical tools such as *R* and MatLab (**D**).
- Proven experience in the area of air pollution dispersion (e.g., CFD) modelling, health impact assessment and modelling, green infrastructure mapping/modelling or statistical analysis tools (**D**).
- Should be motivated and enthusiastic to work in a multidisciplinary environment and should have experience of communicating findings in top-ranked journal papers and writing associated reports (**D**).
- Prior knowledge of air pollution modelling (e.g. vegetation barriers) and sampling of air pollution is desirable (**D**).

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Special Requirements

None

Background Information

[The INHALE project – Health Assessment across Biological Length Scales for Personal Pollution Exposure and Its Mitigation](https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/T003189/1) – is funded by the EPSRC (<https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/T003189/1>). It will see the team examine the biological and physical aspects of pollutants that determine their cellular fate, their potential for cell and tissue damage, and how this relates to health outcomes.

Project summary: To assess the impact of pollution on personal health in outdoor/indoor urban environments, we will develop a physics-based multi-scale approach across biological length scales from the cell, lung, person (surrounded by green infrastructure) up to the neighbourhood scale. We will examine the biophysical components of pollutants that determine their cellular fate, their potential for cell and tissue damage and how this relates to health outcomes. We will use airway models to assess particle deposition and effects on people's health as well as trace the pollution particles through an individual person down to the cellular level. The focus of the analysis will be on the immediate micro-environment (~20m) around a person. The integrated modelling will also represent various intervention scenarios (e.g. roadside hedges or medication for at-risk people such as asthmatics) to assess reduced exposure and corresponding changes in health outcomes. These biologic parameters of exposure will be integrated with the cardio-respiratory response to pollution in 80 participants using a combination of cardio-respiratory, physical activity and personal fine particles exposure monitors. We will numerically model the pollution and air flows at the neighbourhood scale and apply an approach centred on the impact of pollution on health to all aspects of modelling, sensor placement and management of the environment. Thus, any mitigation strategies can be designed to minimize the impact of pollution on health.

We will model the dispersion of particles and their micro-physics within the neighbourhood with an emphasis on green infrastructure and their ability to mitigate pollution e.g. hedges can reduce heavy metal pollution. We will examine the physical effects and functional chemistry of the metals and organic components of particles at the ultracellular level to determine their interference to cell metabolism and health. We will use modelling to predict the outcomes of cell fate, so that we can back propagate biological potential of pollution particles (say) through to the individual and into the neighbourhood scale. Thus, modelling will be key at each length scale.