

### Research Role Profile

<b>Job Title:</b>	Research Fellow A in Solid Oxide Electrolysers: Fabrication & Performance
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<b>Responsible to:</b>	Head of research group, or principal investigator
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<b>Responsible for:</b>	Not applicable
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<b>Job Summary and Purpose:</b>
To undertake research in accordance with the specified research project(s) under the supervision of the principal investigator.

<b>Main Responsibilities/Activities</b>
<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

This document provides additional information relating to both specific aspects of the post/faculty and any post specific person specification criteria. The information contained within this document should always be read in conjunction with the accompanying generic Job Purpose.

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### Background Information/Relationships

Applications are invited for a Research Fellow in the Energy and Materials research group in the [School of Chemistry and Chemical and Process Engineering](#) at the [University of Surrey](#).

The position is funded by an EPSRC grant APP39869: Multi-stack tubular solid oxide steam electrolyser (METASIS 2.0). The project will be led by Dr Bahman Horri in collaboration with Robert Gordon University (RGU). [METASIS](#) is a collaborative research programme advancing next-generation solid oxide steam electrolyser (SOSE) technology for clean hydrogen production. Led by Robert Gordon University in partnership with the University of Surrey, Aston University, and the UK National Nuclear Laboratory (UKNNL), the project unites national and international academic and industrial partners to concentrate on innovative metasurface-engineered tubular designs, advanced ceramic manufacturing, and high-temperature performance evaluation.

The project involves developing a mini-scale tubular high-temperature solid oxide steam electrolyser stack for efficient hydrogen production using an innovative metasurface catalyst and cell design approach, with advanced techniques such as thermal-spray coating and screen-printing/spin-coating.

The postholder will:

- Report to the Principal Investigator (Dr Bahman Horri)
- Work closely with internal academic staff, research staff, and students
- Collaborate with external project partners including:
  - Robert Gordon University (lead partner)
  - Aston University
  - UK National Nuclear Laboratory (UKNNL)
- Contribute to a collaborative, multidisciplinary research environment involving both experimental and applied engineering research

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### Person Specification

This section describes the sum total of knowledge, experience & competence required by the post holder that is necessary for standard acceptable performance in carrying out this role. This is in addition to the criteria contained within the accompanying generic Job Purpose.

<b>Qualifications and Professional Memberships</b>	<b>Essential/ Desirable</b>
PhD (or near completion) in Chemical Engineering, Chemistry, Materials Science, or a closely related discipline	Essential
Experience in electrochemical characterisation techniques, including impedance spectroscopy and polarisation performance testing	Essential
Experience in the fabrication and testing of solid-state electrochemical systems or similar electrochemical devices	Essential
Proven ability to analyse and interpret experimental data for solid oxide electrolyzers or fuel cells	Desirable
Experience in materials synthesis and characterisation, particularly for ceramic or nanocomposite systems	Desirable
Experience in the fabrication and testing of solid oxide electrolysis cells (SOEC) or similar electrochemical devices	Desirable
Experience in materials synthesis and characterisation, particularly for ceramic or nanocomposite systems	Desirable
Practical experience with thin-film/coating techniques (e.g. thermal spray, screen printing, spin coating or similar)	Desirable

### Key Responsibilities

This document is not designed to be a list of all tasks undertaken but an outline record of any faculty/post specific responsibilities. This should be read in conjunction with those contained within the accompanying generic Job Purpose.

1. Synthesising, characterising, and testing active nanocomposites for the fabrication of solid oxide electrolysis cells
2. Fabricating cells using advanced thin layer coating techniques (such as thermal spray coating, screen printing, spin coating, etc.) and integrating them into a mini-stack (~1 kWh system)
3. Analysing electrochemical performance, conducting impedance measurements, and optimising the fabricated cells and stack for efficient hydrogen production via high-temperature steam electrolysis
4. Assisting in publishing high-quality journal papers and/or securing intellectual property to maximise the impact of the research group/project, as well as contributing to the supervision of students within the research group (postgraduate, undergraduate, and overseas visitors)

N.B. The above list is not exhaustive.