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| Job Description |  |

**LONDON’S GLOBAL UNIVERSITY**

**Department of Chemistry**

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| **Research Fellow in Anti-soiling Coatings** |  |
| Department: ChemistryGrade: 7Location: UCL Bloomsbury Campus  |  |

#### Reports to:

Professor Ivan Parkin

#### Context

This position is available to work on the synthesis of precursors for the deposition of anti-soiling coatings via atmospheric pressure chemical vapour deposition (APCVD), which will be achieved through the development of rare-earth oxide precursors. The objective of this research is to develop and test thin inorganic rare-earth oxide coatings for application to solar cover glass. The hydrophobic coating will be low surface energy to reduce the adhesion to soiling. The ideal coating will be capable of being applied at industrial scale using an APCVD process that is compatible with glass manufacturing. Use of the coating will significantly improve the practical power output of solar modules and will have worldwide impact. The appointee will work as part of an established research team of PhD and Masters students within the Department of Chemistry at UCL, and is a collaborative project with the University of Loughborough. A key component of the research will include air/moisture sensitive synthesis, thin film deposition and data analysis of all produced materials. The appointee will play a leading role in the research team, including supervising and training existing group members.

The position is funded by the EPSRC for 12 months. The candidate will join Professor Ivan Parkin and Professor Claire Carmalt’s research teams in the Department of Chemistry at the Bloomsbury Campus of University College London. Information about the group can be found on https://www.carmaltparkingroup.com/

**The Chemistry Department**

The Chemistry Department at University College London is the oldest in England, with 100% of it outputs ranked as being world-leading (4\*) or internationally excellent (3\*) in the recent REF2021. We are located in Bloomsbury, at the heart of London, and offer an exciting and vibrant environment in which to study in one of the UK's top universities. The Department of Chemistry at UCL is committed to supporting excellence in both research and teaching. The department offers undergraduate BSc and MSci programmes in Chemistry and currently teaches ~650 undergraduates registered in Chemistry as well as students who select Chemistry on the Natural Sciences programme and first year Chemistry for life scientists.

The Chemistry Department has over 60 members of academic staff carrying out world-leading research. We specialise in the areas of organic synthesis, chemical biology, computational chemistry, nanotechnology, inorganic and materials chemistry, physical chemistry and chemical physics. The department has an annual research income of around £15 million, derived from many sources including the Research Councils (EPSRC, BBSRC, MRC, and NERC), European Commission and a wide range of charities and industrial partners in the UK, Europe and the USA.

Details about our research can be found on the departmental website <http://www.ucl.ac.uk/chemistry>.

#### Main purpose of the job

The postholder will be required to develop new precursors for the rare earth metal oxides. A key feature of the project will be to investigate the deposition of thin films utilising the precursors – both lab- and large scale films: bringing together Schlenk synthesis skills with materials deposition and characterisation.

Materials characteristics of the deposited films will be probed for their hydrophobicity for application as anti-soiling coatings. Experimental work will be carried out independently but also as part of a team of researchers based in the Chemistry Department, and through collaborations with Loughborough University. The postholder will be expected to supervise PhD and Masters students, assisting experimentally with their research projects, where necessary, and reading drafts of reports and papers, as well as managing lab safety.

#### Duties and responsibilities:

* To contribute to the design of experiments, experimental set-ups and research themes.
* To design, synthesise, isolate and characterise novel precursors.
* To investigate thermal decomposition profiles of precursors.
* To investigate the atmospheric pressure CVD using the precursors.
* To characterize the thin films and test their properties.
* To record, analyze and write up the results of the research.
* To manage, oversee and assist (both experimentally in the lab and in reading report and paper drafts) PhD and Masters research students, including monitoring lab safety as required.
* To contribute to the drafting and submitting of papers to peer reviewed journals.
* To prepare progress reports on research as required.
* To contribute to the preparation and drafting of research bids and proposals.
* To contribute to the overall activities of the research team and department as required.
* To undertake a limited amount of teaching in relation to the subject area.
* To contribute to the induction and direction of other research staff and students as requested.
* Responsibility for ensuring that equipment is safe and maintained in working order.
* The job description reflects the present requirements of the post, and as duties and responsibilities change/develop, the job description will be reviewed and be subject to amendment in consultation with the postholder.
* The postholder will carry out any other duties as are within the scope, spirit and purpose of the job as requested by the line manager.
* The postholder will actively follow UCL policies including Equal Opportunities and be expected to give consideration within their role as to how they can actively advance equality of opportunity and good relations between people who share a relevant protected characteristic and people who do not share it.
* The postholder will maintain an awareness and observation of Fire and Health & Safety Regulations.
* To be aware of and act upon:

Disciplinary procedure and disciplinary rules

Grievance procedure

Section 7 and 8 of the Health and Safety at Work Act

# Person Specification

| **Criteria** | **Essential or Desirable** | **Assessment method****(Application/Interview)** |
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| **Qualifications, experience and knowledge** |  |  |
| PhD (or about to be awarded a PhD) in Chemistry, Materials Chemistry, or a discipline related to fluid flow materials synthesis | Essential | Application |
| Experience with air/moisture sensitive techniques | Essential | Application |
| Experience in using a glovebox  | Essential | Application |
| Experience in running and solving single crystal structures | Desirable | Application |
| Experience in deposition techniques | Desirable | Application |
| Experience in characterisation techniques, including, for example NMR, IR, UV-vis, Raman, X-Ray diffraction.  | Essential | Application |
| Experience in data analysis, using Origin, or similar, software | Essential | Application |
| Experience in thin film characterisation | Desirable | Application |
| GCSE English Grade C or above (or equivalent, e.g. IELTS) | Essential | Application |
| Experience of working in a research environment | Essential | Application |
| Experience of multi-disciplinary working | Essential | Application |
| **Skills and abilities** |  |  |
| Proven research skills in inorganic chemistry synthesis and characterisation | Essential | Application |
| Proven skills in building and/or maintaining research/analytical equipment | Essential | Application |
| Ability to analyse and write up data | Essential | Application |
| Ability to present complex information effectively to a range of audiences | Essential | Interview |
| Effective written and verbal communication skills in English | Essential | Interview |
| Management of lab instrumentation | Desirable | Application/Interview |
| **Personal attributes** |  |  |
| Commitment to high quality research | Essential | Interview |
| Ability to work collaboratively and as part of a team | Essential | Application/Interview |
| Good publication record | Essential | Application |
| Excellent organisational skills | Essential | Application/Interview |

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­ **General Information**

**Terms & Conditions of Employment**

The post is a UCL grade 7 post, the salary for which ranges from £42,099 to £50,585 per annum (including London Allowance of £5,000 p.a.). Starting salary is usually £42,099.

All posts that are based outside of London, for example at Harwell, will **not** have London Allowance included in the salary.

Please note, appointment at Grade 7 is dependent upon having been awarded a PhD; if this is not the case, initial appointment will be at Research Assistant Grade 6B (salary £37,332 - £38,966 per annum, including London Allowance of £5,000) with payment at Grade 7 being backdated to the date of final submission of the PhD thesis.

Progression through the salary scale is incremental. Cost of living pay awards are negotiated nationally and are normally effective from 1st August each year. UCL’s non-clinical pay and grading structure is at <http://www.ucl.ac.uk/hr/salary_scales/final_grades.php>.

UCL’s terms & conditions for research, teaching and professional services staff are at:

<https://www.ucl.ac.uk/human-resources/conditions-service-research-teaching-and-professional-services-staff>

The full range of benefits is at <http://www.ucl.ac.uk/hr/benefits/employee_benefits.php>

**General information for Overseas Applicants**

<https://www.ucl.ac.uk/human-resources/working-ucl/employment-contract-administration-team/immigration>

<https://www.ucl.ac.uk/human-resources/working-ucl/relocating-uk-guide>

**Equal Opportunities**

[www.ucl.ac.uk/hr/docs/equal\_opportunity.pdf](http://www.ucl.ac.uk/hr/docs/equal_opportunity.pdf)

The Department has been awarded a Silver Athena Swan Award and we support the Athena beliefs that:

* The advancement of science, engineering and technology (SET) is fundamental to quality of life across the globe.
* It is vitally important that women are adequately represented in what has traditionally been, and is still, a male-dominated area.
* Science cannot reach its full potential unless it can benefit from the talents of the whole population, and until women and men can benefit equally from the opportunities it affords.

Further information on Athena Swan is at <http://www.athenaswan.org.uk/>

# Apply

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| To apply for this position visit:ucl.ac.uk/jobsSearch under Ref no: |