



POSTDOCTORAL RESEARCH ASSOCIATE

Job Ref: R-587246

Faculty: Science and Engineering, School of Electrical Engineering, Electronics and Computer Science

Salary: Depending on qualifications and experience

Range: £32,277 - £37,394 pa

Location: University Campus

Hours of work: Full-Time

Tenure: The post is available for 2 years from April 2015

Grade: 7

Closing Date: 13 February 2015

Interview Date: To be confirmed

Informal enquiries to Dr. Xin Tu, email: xin.tu@liv.ac.uk

<http://www.liv.ac.uk/working/jobvacancies/currentvacancies/research/r-587246/>

<http://www.jobs.ac.uk/job/AKI079/postdoctoral-research-associate/>

Application Procedure

Applications should comprise:

* A completed **applicant information form**

* A copy of your **full curriculum vitae**

* A statement indicating the reasons for applying for this post and how your training and experience is relevant.

If you have any particular requirements should you be invited to interview, please make this clear in your application.

Submitting Applications

Applications may be submitted by e-mail to jobs@liv.ac.uk or by post or in person to: Human Resources (Recruitment), The University of Liverpool, Hart Building, Mount Pleasant, Liverpool L3 5TQ

ROYAL MAIL – Postal Pricing System. Please ensure that postal applications carry the correct postage according to the weight and measurement of the item, as items with insufficient postage will be held and delayed by the Royal Mail. Details of their pricing system are available online at www.royalmail.com or from a Post Office branch.

Acknowledgement of Applications

Please note that we are unable to acknowledge postal applications. If you would like an acknowledgement please enclose a stamped addressed card or envelope, and place it at the front of your application. If you e-mail your application you will receive an automated acknowledgement.

Shortlisting and Interviews

Shortlisting and interview arrangements are the responsibility of the recruiting department. Please contact **Dr Xin Tu, email: xin.tu@liv.ac.uk** if you have a query after the closing date.

Outcome of Applications

Vacancies at the University often attract a large number of candidates and it is not always possible to respond individually to every application. If you have not heard from the recruiting department by **late March 2015** please take it that your application has not been successful.

Asylum & Immigration

The University will comply with the Immigration, Asylum and Nationality Act 2006, which requires all employees to provide documentary evidence of their legal right to work in this country prior to commencing employment. Please be aware that you will be required to bring your passport (and visa if applicable) to interview so that it can be copied and verified by a member of the Selection Panel. For posts requiring a recognised degree level or equivalent qualification, and where there is no suitable UK or European Economic Area candidate, the University will take the necessary steps to secure UK Border Agency permission for a foreign national to take up employment.

Should a candidate require a Certificate of Sponsorship in order to take up a post they will need to meet the UK Border Agency Tier 2 Points Based Criteria. A self assessment tool can be found on the UK Border Agency website at: www.ukba.homeoffice.gov.uk/pointscalculator

A candidate may also be required to undertake an English Language test prior to commencing work at the University. Details of Home Office approved tests can be found at: <https://www.gov.uk/government/publications/guidance-on-applying-for-uk-visa-approved-english-language-tests>

Further information on the eligibility criteria for Certificates of Sponsorship can be found at: www.ukba.homeoffice.gov.uk/employers/points

Diversity and Equality

The University of Liverpool is committed to diversity and equality of opportunity. All employees and applicants for jobs will be considered on their abilities and will not be discriminated against on the grounds of age, caring responsibilities, colour, disability, employment status, gender, gender identity, marital status, nationality, race or ethnic origin, religion or belief, sexual orientation, socio-economic status or any other irrelevant distinction. Training is available to support career progression within the University.

Two Ticks Disability: Guaranteed Interview Scheme (GIS)

The University of Liverpool is committed to the employment of disabled people, and as part of our commitment, we guarantee to interview all disabled applicants who meet the essential criteria for a post and consider them on their abilities. If your disability prevents you completing the application form by the specified closing date, or when the vacancy closes early, due to a high volume of applications, please call the Recruitment Team to discuss alternative arrangements.

To apply for a post under the disability GIS, you must disclose your disability (as defined by the Disability Discrimination Act, 2005), and mark **X** in the **yes** box on the Equal Opportunities Employment Form. This form **must** be returned with your application form.

Accessibility

If you require copies of documentation in alternative formats, for example, large print or Braille, please contact jobs@liv.ac.uk or telephone 0151 794 6771.

If you have any other requirements which will help you access the application or interview process or employment opportunities at the University of Liverpool, please let us know by contacting jobs@liv.ac.uk or telephone 0151 794 6771.

Pension



The Occupational Pension Scheme associated with this appointment is the Universities Superannuation Scheme (USS). You are encouraged to familiarise yourself with the full particulars of the scheme which can be found [here](#)

DL/12 January 2015

THE TECHNOLOGICAL PLASMA GROUP

The main research activities of the Technological Plasma group within the Department of Electrical Engineering and Electronics are in experimental and modelling studies of low-pressure and atmospheric pressure discharges for applications in materials processing, environmental clean-up and energy conversion.

Part of our research has focused on the interface of plasma physics and plasma chemistry directed towards energy and environmental applications at an international level. This has involved the understanding of the physical phenomena in different plasmas (e.g. thermal plasma jet, gliding arc and dielectric barrier discharge) by means of electrical and optical diagnostics, and the analysis of end-products by gas analytic equipment such as Fourier transform infrared (FTIR) spectroscopy, gas chromatography (GC), GC-mass spectrometry (GC-MS). Significant efforts have been devoted to plasma-catalysis where the combination of atmospheric pressure plasma and catalysis has been used for gas cleaning & purification (e.g. removal of environmental pollutants in waste gas streams) and for the conversion of carbon based compounds (e.g. CH₄ and CO₂) into value-added fuels and chemicals such as hydrogen, C₂ and carbon nanomaterials.

The group is equipped with state-of-the-art plasma diagnostic (e.g. Langmuir probes, time-resolved optical imaging and optical emission spectroscopy, and time resolved mass spectroscopy) and analytic facilities (e.g., GC, FTIR, and GC-MS) for plasma diagnostics and monitoring of gas/liquid products of plasma processes. The team is well equipped to deal with the multidisciplinary nature of plasma science and engineering. Working with industrial partners, the team has gained experience in the scale-up of plasma systems, the development of pilot system and commercial products and conducting field trials.

POST

You will work within the group of Dr Xin Tu in the Department of Electrical Engineering and Electronics. The aim of the project is to develop a novel gas cleaning process based on plasma/catalytic technology to deliver a clean, high quality syngas from the gasification of waste biomass. You will work on the use of plasma in combination of catalysts for the conversion of tar from biomass gasification. The work involves an extensive experimental programme with a range of tar model compounds and a range of different catalysts with subsequent detailed analysis of the product tars and gases and catalyst characterisation. The project will involve collaborations with both academic and industry partners. You should have a PhD in Physics, Chemistry, Chemical Engineering or related disciplines with research experience in plasma science and/or catalysis.

BACKGROUND: THE SCHOOL AND DEPARTMENT

The Department of Electrical Engineering and Electronics forms a new School with the Department of Computer Science. The School brings together complementary teaching and research activities of both Departments. There are significant opportunities to develop career aspirations within the School and to support the School's research and teaching agendas.

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At departmental level, research plays an important role in the life of the Department and Staff, and research is active in a number of core areas of Electrical Engineering and Electronics and associated concepts and technologies.

The research activities in the Department are organised into the following areas:

- BioMEMS
- Organic and Silicon Electronics
- Intelligence Engineering and Industrial Automation
- Plasma and Complex Systems
- Signal Processing and Communications

The Department has a very active postgraduate research programme with approximately 130 research students engaging in PhD studies and approximately 20 Postdoctoral Research Associates. Also, there are a large number of international collaborations with visitors from overseas universities, research institutes and industry. There is close involvement with more than 50 major companies and research organisations. Collaboration with UK and foreign Universities is a strong feature of our research. Research income currently stands at around £2.6 million per annum. The Department's undergraduate BEng and MEng programmes and its postgraduate Masters programmes are accredited by the Institution of Engineering and Technology (IET). Many of the undergraduate programmes also have a year in industry element. There is healthy recruitment of students on to these programmes. The University has established a joint University, Xian Jiao Tong Liverpool University (XJTLU) in Suzhou, China in partnership with Xian Jiao Tong University a top tier university in China. Students at XJTLU studying Electrical/Electronic programmes follow our syllabus and can transfer directly in to Year 2 of our programmes. This is an additional stream of able students contributing to the overall student numbers.

All our undergraduate programmes has strong practical and design elements involving “active learning” and the aim is to further enhance an environment which will both attract excellent students from a diverse range of backgrounds and prepare them for research and industry.



EMPLOYEE SPECIFICATION – Shortlisting Criteria

Post Title: Postdoctoral Research Associate

Salary: £32,277 - £37,394 pa

Department: Electrical Engineering & Electronics

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| Attributes | No. | Essential Criteria (Identified from – Application form/CV/Supporting Statement/Interview/References) | Desirable Criteria (Identified from – Application form/CV/Supporting Statement/Interview/References) |
|--|------------|---|---|
| 1. EXPERIENCE | 1.1 | Experience with atmospheric pressure non-thermal plasma systems or catalysis for environmental clean-up, hydrocarbon reforming or fuel production | Experience in the area of plasma-catalysis or plasma preparation of catalysts |
| | 1.2 | Experience with writing and publishing high quality research papers in leading international journals | |
| 2. EDUCATION QUALIFICATIONS TRAINING | 2.1 | PhD in Physics, Chemistry, Chemical Engineering or relevant disciplines | |
| 3. SKILLS, GENERAL AND SPECIAL KNOWLEDGE | 3.1 | Ability to do gas and liquid analysis (e.g. GC, GC-MS and FTIR) | Characterisation and synthesis methods for catalysis Modelling of chemical processes in plasma environment Plasma diagnostics Ability to supervise PhD and undergraduate/postgraduate project students |
| | 3.2 | Ability to design and develop of plasma systems | |
| | 3.3 | Good presentation and writing skills | |
| | 3.4 | Excellent organisational and time management skills | |
| | 3.5 | Excellent interpersonal and communication skills | |
| 4. PERSONAL ATTRIBUTES AND CIRCUMSTANCES | 4.1 | Able to work well independently and as part of a team | |
| | 4.2 | Ability to take responsibility for projects and to manage own workload | |
| | 4.3 | Ability to undertake prescribed tasks and to be responsive to feedback | |

