Department of Chemical Engineering
School of AAME

Loughborough University

Research Associate in Paper-based Diagnostics

Job Ref: REQ220881

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Job Description

Applications are invited for a Postdoctoral Research Associate position to work on an exciting and ambitious research on biomarker preconcentration in paper-based analytical devices. Point-of-care testing devices enable rapid, affordable, and widely accessible diagnosis, but their limited sensitivity makes them inappropriate for the diagnosis of early-stage diseases. To address this ongoing technological challenge, we aim to introduce a radically new concept for biomarker preconcentration by exploiting colloid transport mechanisms based on interfacial and electrokinetic phenomena. The validation of this new approach could lead to breakthrough point-of-care diagnostics technologies, that could contribute to the global democratisation of diagnostics.

We are looking for an outstanding and innovative scientist/engineer with research experience in at least one of the following areas, colloid and interface science, biosensors and rapid diagnostic technologies, physics of liquids, physical chemistry, biochemistry. You are expected to have advanced experimental research experience at doctoral level (or equivalent) on paper-based or other analytical or diagnostic microdevices, or mass transport in porous media, or colloid and interface transport phenomena. You should have a PhD degree (or be close to completion) in engineering, physics or chemistry or a relevant science discipline. Experience in design/validation of microdevices, programming (e.g., Python, Matlab) and modelling software (e.g., Comsol) would be valuable. Excellent organisation and communication skills are essential.

You will join the Particle Microfluidics Group at Loughborough University, and work in close collaboration with our industrial partner, Global Access Diagnostics – a leading developer of lateral flow assays and rapid diagnostic technologies. You will build connections in interdisciplinary research areas – including colloid and interface science, microfluidics, rapid diagnostics, biosensors and optics – and develop collaborations with other international researchers in top universities. You will have great opportunities for further development of your career, either in academia or industry, by training on teaching and leadership, supervision of the research students, and presenting the research in the UK and international conferences.

Project start date is 1st October 2022.

For further information or an informal discussion about the position please contact Dr Guido Bolognesi at g.bolognesi@lboro.ac.uk.

The School/Department is strongly committed to promoting equality and diversity, including the Athena SWAN charter for gender equality in higher education. The School/Department holds a Bronze Award which recognises their good practice in relation to gender; including flexible working arrangements, family-friendly policies, and support to allow staff achieve a good work-life balance. We particularly welcome applications from women for this post. All appointment will be made on merit.

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of

family-friendly policies which are available at http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure--- page.html.

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose:
The Research Associate will be responsible for undertaking experiments to investigate the transport of molecules and colloids in paper-based porous membranes and to design and validate proof-of-principle lateral flow assay devices implementing new electrokinetic preconcentration strategies. The research aims to generate new fundamental understanding of the physico-chemical processes governing mass transport in porous membranes and to apply this new knowledge to underpin the design and optimisation of novel ultrasensitive point-of-care testing devices.

Job Duties

Research

The work entails, primarily, the following activities

- To set up experimental platforms, design and perform high-quality experiments to deliver the project objectives
- To design, fabricate and characterise paper-based microfluidic devices
- To characterise analytes/particle transport in paper-based microfluidic devices
- To use material characterisation techniques such as optical microscopy, electron microscope, dynamic light scattering, electrophoretic light scattering, and others
- To design, test and validate experimentally proof-of-principle lateral flow assay devices
- To report on all these activities through participation at internal and external meetings
- To collaborate with our industrial partner, including short visits
- To be an active member of the research group by contributing to group meetings, managing group equipment and facilities, training and supervising research students
- To lead, plan, manage and conduct the work to agreed deadlines
- To prepare research posters and presentations, presenting in the UK or international conferences
- To write up and publish high-quality academic papers for publication

Teaching

Teaching is not the primary purpose of this post; candidate may have a chance to take training and gain teaching experiences in the School.

Other Related Activities and Functions

- To perform risk assessments, method statements and implement safety procedures
- To engage in training programmes in the University (e.g. through Professional Development) and elsewhere as required.
- To undertake such 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 responsibilities of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to project PI and to attend and present at internal and external project meetings.

Person Specification

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application
2 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Expertise and experience in at least one of the following areas, colloid and interface science, biosensors and rapid diagnostic technologies, physics of liquids, physical chemistry, biochemistry	1, 2
	Experience in design and setting up experiments	1, 2
	Advanced experimental research experience on either paper-based or other analytical microdevices, or mass transport in porous media or colloid and interface transport phenomena	1, 2
	Track record in conducting of original research and publication	1
	Experience in scientific presentations at conferences	1
Skills and abilities	Ability to investigate and characterise experimentally liquid or colloid systems	1, 2
	Ability to compare experimental observations with theoretical predictions and to determine underlying physical and chemical processes governing the examined system	1, 2
	Research management skills with a focused drive for deliverables	2
	Excellent communication skills - both written and oral	1, 2
	Excellent IT and relevant software skills	1
	Excellent organisation and team-working skills	2
Qualifications	PhD degree or near completion in the relevant areas.	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	1

Desirable Criteria

Area	Criteria	Stage
Experience	Experience in design, validation and optimisation of microdevices	1, 2
	Programming (e.g. Python, Matlab) and experience in modelling software (e.g. Comsol)	1, 2
	Experience in collaborations with researchers or industry partners	1, 2
	Project planning/leadership experience	2
	Writing and publishing high-quality research papers	1, 2

Skills and Abilities	Ability to develop a programme of original research and persuade others of its importance	2
	Skills in the characterisation of colloidal particles, porous media	1, 2
	Skills in the characterisation of analytical microdevices	1, 2
	Ability to demonstrate the scientific ideas to public audiences and industrials	2
	Ability to find out and solve research problems	2
Others	Highly motivated with the ability to set and meet deadlines	2

Conditions of Service

The position is full time and fixed-term for 18 months. Salary will be on Specialist and Supporting Grade 6, £31,406 to £40,927 per annum, at a starting salary to be confirmed on offer of appointment. Subject to annual pay award.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Academic and Related staff, details of which can be found here.

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure--- page.html.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: http://www.lboro.ac.uk/services/hr/a-z/childcare- information---page.html

In addition, the University is supportive, wherever possible, of flexible working arrangements.
We also 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 careers. For further information on Athena SWAN see http://www.lboro.ac.uk/services/hr/athena-swan/

Applications

Applications must be submitted online at https://vacancies.lboro.ac.uk/. Please provide a CV and cover letter as one PDF file attached in the application form.

The closing date is 17th August 2022

Interviews will take place w/c 22nd August 2022