Wolfson School of Mechanical, Electrical and Manufacturing Engineering

Loughborough University

Postdoctoral Research Associate in the Development and Measurement of Optically Transparent Metasurfaces

Job Ref: REQ250651

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

We are looking for one Postdoctoral Research Associate on a full-time basis, to support the Engineering and Physical Sciences Research Council funded grant Transparent Transmitters and Programmable Metasurfaces for Transport and Beyond-5G (TRANSMETA). Based in the Wolfson School of Mechanical, Electrical and Manufacturing Engineering (Wolfson).

The successful applicant may work on different aspects of the project that span simulations and measurements of electromagnetic metasurfaces, analytical coding, printing, expertise in materials, writing high quality journal papers.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose: This role is responsible for developing a new method of measuring the properties of materials; designing, simulating, fabricating and measuring metasurfaces.

Job Duties:

Specific and Technical

- To design and simulate optically transparent electromagnetic mmWave metasurfaces.
- To develop analytical model based on theory.
- To fabricate metasurfaces.
- To develop measurement rigs in collaboration with technicians.
- To carry out measurements of material properties, such as dielectric constant and loss.
- To carry out metamaterial, radiofrequency (RF) and antenna measurements.
- To collaborate with colleagues.
- To contribute to funding applications.

General Technical

- To formulate detailed plans for the project based on broad guidance from the project team.
- To work closely with colleagues and collaborating partners from academia and industry, to prepare and carry out experimental work.
- To develop experimental demonstrators.

- To provide a professional point of contact for suppliers and external partners and to liaise effectively with colleagues throughout the School and collaborators from the partner universities.
- To produce and present technical reports at project meetings as required.

Teaching

- To supervise/co-supervise UG and MSC student projects.
- As required, to assist research students in their use of the lab spaces and equipment.
- To assist with software and hardware labs in taught classes.

Other

- To make a practical contribution to discussions on the future technical activities in the Group.
- To collaborate with colleagues in the creation of new knowledge and experimental data collection techniques.
- To share responsibility for the daily maintenance and upkeep of equipment and laboratory space.
- To ensure that a safe working environment is maintained at all times through compliance with Health and Safety at Work Regulation and the University's Operational Procedures.
- To take responsibility as requested for the sourcing and procurement of stock and specialist items.
- To write and assist in writing conference and journal papers. To actively participate in appropriate conferences.
- To participate in training as required.
- To carry out specific duties as may be reasonably requested by the project leader 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 responsibility 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 & Inclusion 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 Belonging and Inclusion and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to Prof. Will Whittow.

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 – Test/Assessment Centre/Presentation
3 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Previous experience of working within a University engineering department, facility or research environment	1, 3
	Significant postgraduate research experience of antennas and metamaterials	1, 3
	Postgraduate research experience of measurements at microwave frequencies using VNAs	1,3
	Authoring original work for academic journal papers and conference presentations	1, 3
Skills and abilities	Proven ability to plan and execute additive manufacturing processes for different materials	1, 3
	Applied experience in the use of CAD software	1, 3
	Proven ability to build experimental setups including electronics and software interfaces	1, 3
	Proven ability to develop and implement mathematical models	1, 3
	Proven ability to perform electromagnetic simulations using CST or HFSS or similar	1, 3
	Proven ability to carry out measurements of dielectric properties	1, 3
	Ability to produce written research reports	1, 3
	Demonstrable ability to work with efficiency and accuracy to deadlines	1, 3
	Professional manner with excellent interpersonal and communication skills	1, 3
	Ability to show initiative and work independently but also make a full contribution as a team player	1, 3
Training	Be prepared to undertake further training both internally and externally	3
Qualifications	PhD (or near completion) in Engineering with a topic related to microwave/antenna engineering	1
Other	To observe the University's Equal Opportunities policy at all times	3
	To comply with Health and Safety regulations	3
	Commitment to maintain confidentiality at all times	3
	Be available to start at Loughborough in 2025 or January 2026	1,3

Desirable Criteria

Area	Criteria	Stage
Experience	Current relevant work experience at a postdoctoral level in an academic or industrial environment	1, 3
	Evidence of publishing in high quality journals, such as IEEE Transactions	1, 3
	Formal/informal supervision of UG students	1, 3
Skills and abilities	Understanding of current Health and Safety legislation, risk management and COSHH regulations	1, 3
	Willingness to travel	3

Conditions of Service

The position is full time and fixed term for up to 18 months (project must end by 30th June 2027). The applicant must start at Loughborough before/by Jan 2026. Salary will be on Research Grade 6, £35,116 to £37,174 per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Technical staff, details of which can be found http://www.lboro.ac.uk/services/hr/a-z/conditions-of-service.html.

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 career. For further information on Athena SWAN http://www.lboro.ac.uk/services/hr/athena-swan/.