

Research Associate in Antennas and Metasurface Design

Job Ref: REQ260583

School summary:

The Wolfson School of Mechanical, Electrical and Manufacturing Engineering at Loughborough University is one of the largest and most successful engineering schools in the UK, consistently ranked among the top ten for our disciplines. We combine world-leading research with an outstanding student experience, underpinned by long-standing partnerships with industry leaders. Our collaborative and ambitious culture supports colleagues to excel across research, teaching and enterprise in support of the University Strategy, Creating Better Futures. Together.

Project Description: 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 Family and Grade: Specialist and Supporting Academic Research Grade 6

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

Job Duties

- To design and simulate optically transparent electromagnetic mmWave metasurfaces.
- To develop analytical model based on theory.
- To fabricate antennas and 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 outlined in the document.

Organisational Responsibility

Reports to: Prof William Whittow and Dr Aakash Bansal

Person Specification

Your application will be assessed based on the essential and desirable criteria listed below.

Applicants are strongly encouraged to explicitly demonstrate how they meet each essential (and desirable) criteria at the application stage. The criteria that you need to demonstrate in your application will be listed as Stage 1 in the table below.

Stages of assessment are as follows:

- 1 – Criteria measured at Application
- 2 – Criteria measured at Test/Assessment Centre/Presentation
- 3 - Criteria measured at 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 as soon as possible	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 appointment will be subject to the [University's Terms and Conditions of Employment](#) relevant to the job grade.

Shared University Responsibilities

As a member of the Loughborough community, you are expected to:

- Take reasonable care of yourself, others and the environment, and to prevent harm by your acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Sustainability Policies & Procedures.
- Support and contribute to the University's commitment to Equity, Diversity, and Inclusion (EDI), while carrying out all duties in a way that respects these principles and upholds the right to free expression. Further information about EDI at Loughborough and our strategic aims is available on our website

Our Purpose, Vision, and Values

Our purpose, Vision and Values underpin all that we do and shape how we work together at Loughborough.

We're proud to promote our values: **Adventurous**, **Collaborative**, **Creative**, **Authentic** and **Responsible**. Our people bring these values to life every day, and they are central to the positive and supportive culture that makes Loughborough unique.

If you join us, you'll be encouraged to bring these values to life in your own work and contribute to the positive, supportive culture that makes Loughborough unique.

Read more about our [vision and values](#).

Our Accreditations



We 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.



We are proud to be a [Race Equality Charter Member](#). The Charter aims to improve the representation, progression and success of all minority ethnic staff and students within higher education and address issues of racism within higher education institutions (HEIs).



We are proud to be a Disability Confident Employer and have adopted a proactive approach to employing disabled people and to creating a more diverse workforce. We ensure that our recruitment processes are inclusive and accessible. We guarantee to offer an interview to all applicants who have declared themselves with a disability, provided they meet the essential criteria for a role. We proactively anticipate and provide reasonable adjustments and support existing employees who acquire a disability or long-term condition to thrive in the workplace.



We are a real living wage employer, and our Living Wage Employer Mark shows our commitment to paying our staff according to the cost of living.



We are proud supporters of the [City of Sanctuary movement](#) and delighted to be recognised as a University of Sanctuary. This national network brings together, university staff, lecturers, academics and students, who together work to make Higher Education institutions place of safety, solidarity and empowerment for people seeking sanctuary.

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.