Wolfson School of Mechanical, Electrical and Manufacturing Engineering

Loughborough University

ANISAT Project: Postdoctoral Research Associate in the development and measurement of metasurfaces and metamaterials

Job Ref: REQ221296

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.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 a Postdoctoral Research Associate on a full-time basis, to support the Engineering and Physical Sciences Research Council funded grant: Anisotropic Microwave/Terahertz Metamaterials for Satellite Applications (ANISAT). Based in the Wolfson School of Mechanical, Electrical and Manufacturing Engineering (Wolfson), the post-holder will work closely with colleagues from the University of Birmingham.

ANISAT is an ongoing collaborative research project which will end in September 2024. Loughborough University is leading the project in collaboration with the University of Birmingham. Several companies are also contributing to the research. ANISAT's overarching aim is to develop anisotropic microfabricated samples for satellite applications. The primary role of the Researcher will be to measure the anisotropic dielectric properties using metasurfaces.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

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

Job Duties:

Specific and Technical

- To design and simulate 3D electromagnetic metamaterial geometries.
- 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 and future direction of the ANISAT project.
- To collaborate with colleagues on the ANISAT project 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 support ANISAT's work.
- To write and assist in writing conference and journal papers. To actively participate in appropriate conferences.
- To participate in outreach projects relating to the ANISAT project.
- 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 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.

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 2022	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

We have one full time position with a fixed term of 20 months. Please note, funding for this position can not extend beyond 30th September 2024. The applicant must start at Loughborough in 2022 or early 2023. Salary will be on Research Grade 6, £32,348 to £35,333 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/.