

Research Associate in Analysis & Inspection of Porous Structures

Job Ref: REQ260054

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

The Wolfson School of Mechanical, Electrical and Manufacturing is one of the leading Engineering Schools in the country. With a strong tradition in Manufacturing and in the discovery and application of Materials for applications in a broad range of industrial sectors (e.g., electronics, bioengineering & healthcare, automotive, food industry, etc), we strive for academic excellence and research at the leading edge.

Project Description

The project entails the inspection and analysis of engineered porous structures via computed tomography. These engineered structures are stochastic and lattices. The materials range include polymers and metals. The role will involve establishing the optimum operating set-ups/parameters (SOPs) of micro-computed tomography equipment to acquire quality 3D image data sets. These data sets will then be re-constructed into 3D models to allow the validation, inspection and study of the scanned artefacts to be used in simulations and/or inform the generation of digital twin models for manufacturing processes.

Key Requirements:

The candidate needs to have experience in:

- Image processing and/or processing of MicroCT/CT or x-ray data.
- Use of analytical equipment in a laboratory environment (e.g. x-ray, MicroCT, image processing, microscopy).
- Experience working with computational modelling tools to visualise and process acquired data sets.
- Experience of acquiring, curating and analysing data derived from analytical techniques.
- Demonstrate excellent communication and interpersonal skills
- Demonstrated experience working in a lab, including the preparation of risk assessments and COSSH forms to ensure a safe working environment

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

To conduct research in the fields of image analysis and data analysis from 3D microCT and/or 2D image capture equipment. Operation and optimisation of microCT equipment. Curation, post processing and handling of acquired data to digitally re-construct the 3D artefacts for subsequent engineering analysis and validation of the physical artefacts.

Job Duties

- To perform scans followed by image processing and characterisation techniques to analyse and visualise data with scientific rigour and of publishable quality.
- To use analysis packages to handle 2D (such as Image-J, MatLab, etc) and 3D (such as Dragonfly or VGStudio, for example) datasets, their reconstruction and preparation for further analysis (e.g., simulation)
- To prepare samples for scanning and inspection, which includes a variety of materials (e.g., metals, polymers, ceramics, composites, etc)

- To conduct research of academic rigour and scientific standard, carry out authoritative literature reviews, and publish in top quality journals, consistent with the School's and Research Lab's quality and ambition.
- Write up regular progress reports and present outcomes to all Investigators and Collaborators (incl. those located at other Institutions), making recommendations for next steps.
- Demonstrate excellent self-management and organisational skills and a committed approach to work
- To work as part of a multi-disciplinary, multi-location team that addresses different aspects of the design, manufacturing, validation cycle of porous materials and structures.
- To attend and contribute to conferences, seminars, webinars and other events of interest to the team.
- To contribute to project promotion and public engagement events.
- To contribute ideas for new research and impact directions.
- To always maintain confidentiality and ensure that intellectual property (IPR) generation is safeguarded, and agreements are not violated.
- To assist the academic staff in the project team with the supervision of undergraduate, MSc or PhD project work and day-to-day supervision and support of other researchers.
- To engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Lab.
- To undertake 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 responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed. Training will be provided as necessary and in support of the Researchers' professional development, and an attitude for learning will be an essential criterion in the selection of a successful candidate.

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 Equity & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equity & 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 Carmen Torres-Sanchez, Principal Investigator on the Grant.

Person Specification

Your application will be reviewed with respect to meeting 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, giving examples of recent experience. You may use the **STAR** approach: explain what the **Situation** was, which **Task** you had to do or were allocated, what **Action** you took, what you did and a justification, and what was the **Result**. It is highly recommended that the candidates express in their Cover Letter how they fit to the Job Purpose and Job Duties described above. Stages of assessment are as follows:

- 1 – Application
- 2 – Test/Presentation
- 3 – Interview

Essential Criteria

	Criteria	Stage
Experience	Experience within a high-quality research or development environment	1, 3
	Authoring original work for academic journal papers, conference papers or technical reports	1
	Experience of working with scanners, microCT, x-rays, microscopes, etc in a laboratory environment	1, 3
	Knowledge of Health & Safety procedures, risk assessments, COSHH forms, safe disposal routes, etc	1, 3
	Experience of data curation, post-processing using acquired data in such as 3D reconstructions.	1, 3
	Experience of using software such as Dragonfly, Image-J, Matlab etc.	1, 3
	Experience of deriving experimental protocols	1, 3
	Demonstrate excellent self-management and organisational skills and a committed approach to work	1, 3
Skills and abilities	Ability to organise resources to support and further own research activities within the scope of their work, including liaising with third parties	1, 3
	Ability to work independently to meet deadlines	2, 3
	Excellent written and oral communication skills in English	1, 2, 3
	Excellent interpersonal and organisational skills	1, 3
	Ability to write project reports and make technical presentations to industrial and academic research groups	1, 3
Training	Evidence of having undertaken further training and a willingness to be trained if necessary to fulfil the requirements of the job	1, 3
Qualifications	PhD (or close to completion) in a related subject or equivalent industrial experience	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	3

Desirable Criteria

Area	Criteria	Stage
Experience	Sample preparation of various types (metals, polymers and ceramics)	1, 3
	Working knowledge of porous materials and routes to produce porosity in a variety of materials.	1, 3

Skills and abilities	A self-starter who can operate effectively with minimal supervision, liaising with members of the team on own initiative	3
	Presentation skills of technical and non-technical aspects of the project to various audiences (i.e. academic and industrial collaborators, and general public dissemination of results and impact)	1,3
Other	Able to travel to academic and industrial collaborators' sites	1, 3

Conditions of Service

The position available is FULL-TIME and FIXED TERM for 12 months with a possibility for an extension of up to another 12 months on the basis of a mid-term review of the Grant that will inform future research directions. Salary will be on Specialist and Supporting Academic Grade 6 (£35,608 to £41,064 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 Academic and Related staff/Operational and Administrative 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 and dynamic working when the tasks and assignments of the project can permit it.

We also strive to create a culture that supports equity 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 see <http://www.lboro.ac.uk/services/hr/athena-swan/>