

## Research Associate in Materials Processing and Manufacturing: *Future Manufacturing Platform*

Job Ref: REQ180416

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.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 Future Manufacturing Platform is co-funded by the EPSRC and Industrial Collaborators and gives us the opportunity to offer a post for a Senior Materials Scientist or Engineer to work in a number of projects related to the development of Multifunctional Materials and their Manufacturing Sciences. This Platform is an umbrella for development projects such as:

- Deposition and processing of Transparent Conductive Oxide (TCO) coatings that can be used, for example, within touchscreen displays
- Bioactive alloys that can be used as implantable devices (i.e. Titanium alloys) in Healthcare Engineering
- Functional polymers with controllable thermomechanical properties (e.g. loaded with drugs for Pharmacological use)
- High performing composites (i.e. fibre-reinforced polymers) that can realise the expectation of industries such as Automotive and Transport for lightweight materials for low carbon emission applications.

The variety of the projects in this Platform is significant and we would not expect highly specialised candidates covering all of the areas above

### Job Description

**Job Grade:** Specialist and Supporting Academic Grade 6

### Job Purpose

To conduct research in the area of Multifunctional Materials Manufacturing. To develop new scientific understanding and test protocols. To be responsible for the development of manufacturing and characterisation protocols. To plan, prepare and undertake experiments. To characterise materials and optimise processes. To undertake primary data collection and analyse it with the aim of producing high quality scientific reports and papers suitable for publication in International Journals.

### Job Duties

- To undertake research into materials specification, fabrication processes and materials characterisation

- To apply experience in data gathering and analysis using tools such as MatLab, Origin, GraphPad, SPSS, etc
- To conduct research of academic rigour and scientific standard, carry out thorough literature reviews, and publish in top quality journals, consistent with the quality and ambition of the department
- To operate manufacturing equipment for materials deposition and patterning such as 3D printers, spin coaters, sputter coaters, photolithography. To chemically process materials including etching, surface modification, electroplating and electrophoresis. To process materials using, for example, powder metallurgy, laser sintering, casting & sintering ovens, thermal treatment furnaces, vacuum pumps, grinders, etc
- To develop and implement materials preparation techniques and protocols prior to the materials characterisation
- To perform physical, chemical, microstructural, thermomechanical, electrical characterisation and analysis of the materials under study (e.g. SEM, TEM, DMA, DSC, XPS, micro-CT, mechanical testing, nanoindentation, corrosion, AFM, XRD, etc)
- Maintain a systematic record of scientific outcomes
- To be responsible for the day-to-day running and maintenance of the materials processing equipment in the Wolfson Manufacturing labs that are pertinent to the projects the candidate will be involved with
- To carry out Risk Assessments and COSHH inventories in order to ensure a safe environment in the labs
- To assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day-to-day supervision and support of other researchers.
- Write up regular progress reports and present outcomes to all Investigators and Collaborators, making recommendations for next steps.
- To support the project team by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.
- Travel to external partners and collaborators to undertake experimental trials, attend meetings and make presentations.
- To attend and contribute to conferences.
- To contribute to project promotion and public engagement events.
- Contribute ideas for new research and enterprise directions.
- Maintain confidentiality at all times and ensure that intellectual property (IPR) agreements are not violated.
- Where appropriate, to deliver teaching, tutorial and laboratory sessions to students.
- Engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.
- 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. Given the spread of the projects available, training will be provided and an attitude for learning new techniques 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 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 Dr David Hutt and Dr Carmen Torres-Sanchez, Principal Investigators.

## 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. Stages of assessment are as follows:

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

### Essential Criteria

	Criteria	Stage
Experience	Significant experience within a research or development environment	1, 3
	Authoring original work for academic journal papers, conference papers or technical reports	1
	Proven experience in the use of typical materials characterisation equipment (for example SEM, XRD, DSC, XPS, nanoindentation, etc)	1, 2, 3
	Using creativity to analyse and interpret research data and draw conclusions on the outcomes	2, 3
	Using initiative to identify areas for research, developing new research methods and extending the research portfolio	3
Skills and abilities	Ability to organise resources within laboratories and externally, co-ordinating multiple aspects of the work to meet deadlines	1, 3
	Ability to plan own workload in accordance with the overall project objectives and work independently	3
	Excellent written and oral communication skills	1, 2, 3
	Self-motivated with an ability to work independently and in teams in order to meet the project(s) deadlines	1, 3
	Excellent interpersonal, and organisational skills	1, 3
	Working knowledge of data analysis software packages [e.g. MatLab, Origin, Excel, SPSS, etc]	1
	Ability to write project reports and make technical presentations to industrial and academic research groups	1, 3
	Knowledge of relevant Health & Safety issues	1, 3
Training	Demonstrate 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 near completion) in Materials Science, Materials Engineering, Physical Sciences or related discipline and at least a 2:1 Bachelors or Masters level Degree in any of the STEM subjects.	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	3

### Desirable Criteria

Area	Criteria	Stage
Experience	Involvement in or having worked across different projects, demonstrating an ability to manage own time and competing priorities	1, 3
	Developing proposals for funding from external agencies	1, 3

	Working in a high quality academic research environment	1, 3
	Experience of teaching and / or supervision of students in relevant areas	1, 3
	Dealing with problems which may affect the achievement of research objectives and deadlines	3
	Depth of understanding of the Science of one or more of the materials research areas applicable to this post, e.g. Transparent Conducting Oxides, polymers, metal alloys, composites, ceramics	1, 2, 3
	A strong publication track record	1
Skills and abilities	Working knowledge of Image Analysis software	1, 3
	A self-starter who can operate effectively with minimal supervision	3
Other	Able to travel to industrial collaborators' sites	3

## Conditions of Service

The position is **full time** and **fixed term for 24 months** with a possibility for an extension on the basis of good performance. Salary will be on Specialist and Supporting Academic Grade 6, (£29,799 - £38,833 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 Grade 6 and above 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 career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>

## Informal Enquiries

Informal enquiries should be made to Dr David Hutt, by email at [d.a.hutt@lboro.ac.uk](mailto:d.a.hutt@lboro.ac.uk) or by telephone on +44 (0) 1509 227 658 or to Dr Carmen Torres-Sánchez, by email at [c.torres@lboro.ac.uk](mailto:c.torres@lboro.ac.uk) or by telephone on +44 (0) 1509 227 518

## Applications

The closing date for receipt of applications is **12 June 2018**.

Interviews will be held on 20 June 2018. The applicants are recommended to attach their best journal publication to their application. Please submit all your documents as a single file.