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Job.

## Department of Engineering Materials

### Postdoctoral Research Associate in Nanoparticle Architecture

#### Job Description

##### Brief outline:

The post is funded by the Engineering and Physical Sciences Research Council (EPSRC) to examine novel nanostructured meta-materials made of nanoparticles by means of electron microscopy. The post is part of a three-University collaborative project and the postholder will be expected to closely collaborate with project partners. The successful applicant will work within the NanoLAB Research Centre of the Department of Engineering Materials. The work package comprises experimental and computational work, including 3D characterisation of materials by tomography and structural characterisation of materials by in-situ TEM testing. Skills in chemical synthesis, electron microscopy and computer data processing/ tomography are therefore desirable.

**Report to:** Principal investigator of the project, Dr Guenter Moebus.

#### Main Duties and Responsibilities

- § Use electron microscopy (TEM) for the special purpose of in-situ testing and tomography, as specified by the project.
- § Operate specific specimen handling and nanomanipulation equipment to carry out sophisticated experiments.
- § Operate chemical synthesis and chemical modification equipment on laboratory-scale.
- § Operate hardware and software as required for extensive computer reconstruction of tomographic imaging data.
- § Collaborate with project partners in the UK and overseas.
- § Travel to project partners (UK and overseas) as well as to national and international conferences.
- § Read academic papers, journals and textbooks and attend conferences to keep abreast of developments.
- § Write supporting documents to contribute to and support the work of the Research Group, eg reports, interim reports and grant applications. Carry out administrative roles as required; as secretary to Research Group meetings, etc.
- § Assist with administrative tasks in the research centre and with student supervision as well as with joint operations involving multiple RAs in the group.
- § Contribute to training/supervision of students and other group members.

## Planning and Organising

- § Liaise with project partners to coordinate meaningful combinations of experimental and modelling work.
- § Liaise with experimental partners to exchange samples and discuss joint experiments.
- § Plan the short and long term progress and keep records of own work and of the progress of the project as a whole.
- § Plan several months in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
- § Continuously monitor and check results. The unpredictability of research means that daily planning needs to accommodate new developments.
- § If given a particular hypothesis to examine, plan for own contribution up to 3 months ahead, incorporating issues such as the availability of resources, deadlines, project milestones and overall research aims. Design individual experiments weekly.

## Resource Management Responsibilities

- § Assist the investigators in managing grant finances.

## Person Specification

Applicants should demonstrate evidence of the following:

Ref.	Criteria	Essential	Desirable	How this criteria will be assessed e.g. Application / Interview / Presentation / References
<b>A</b>	<b>Qualifications and experience</b>			
	§ Possess or be close to completion of a PhD (or equivalent experience), in a related subject.	ü		Application/Interview/References
	§ Have knowledge of materials/chemistry of solids.	ü		Application/Interview
	§ Have knowledge in optics/image or data processing.	ü		Application/Interview
	§ Knowledge of electron microscopy.		ü	Application/Interview
	§ Knowledge of tomographic procedures.		ü	Application/Interview
	§ Knowledge of synthesis of nanoparticles.		ü	Application/Interview
	§ Knowledge of mechanical properties.		ü	Application/Interview
	§ Ability to write programme code, preferably in modern tools such as MATLAB/IDL.		ü	Application/Interview
<b>B</b>	<b>Working practice and skills</b>			
	§ Proven ability to communicate with collaboration partners to develop a meaningful work	ü		Interview/References

	<p>schedule.</p> <p>§ Proven ability to present results to international audiences at conferences.</p> <p>§ Ability to apply creative solutions to develop new approaches to research problems.</p> <p>§ A high level of accuracy in developing and documenting research procedures and experiments.</p>	<p>ü</p> <p>ü</p> <p>ü</p>		<p>Interview/References</p> <p>Interview/References</p> <p>Interview/References</p>
<b>C</b>	<b>Personal effectiveness</b>			
	<p>§ Track record of research publication.</p> <p>§ Track record of conference activity.</p> <p>§ Evidence of Interest/enthusiasm for the subject of the project.</p>		<p>ü</p> <p>ü</p> <p>ü</p>	<p>Interview/References</p> <p>Interview/References</p> <p>Interview/References</p>

## Further Information

This post is fixed-term, for a period of up to 36 months.

**Informal enquiries:** Informal enquiries may be directed to Dr G. Moebus at [g.moebus@sheffield.ac.uk](mailto:g.moebus@sheffield.ac.uk).

**Salary:** £27,999 - £28,839 per annum with the expectation of annual incremental progression.

**Terms and conditions of employment:** Will be those for Grade 7 staff.

**Closing date:** 12 November 2009.

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