

DEPARTMENT OF MATERIALS, UNIVERSITY OF OXFORD

**Postdoctoral Research Assistant In Quantitative Characterization Of
Welded Microstructures And Chemistry Evolution
Grade 7 / Salary in the range: £28,839 to £31,513 pa / Job Ref No: DJ09/018**

A postdoctoral research position is available in the area of **Quantitative Nanoanalysis**. The position is for up to three years and should start in April 2010. The appointed researcher will be an active part of the European project “**Modelling of Interface Evolution in Advanced Welding (MINTWELD)**” which has been funded by the European Union (FP7) and involves eleven European participants.

The objectives of the **MINTWELD** project are to make a number of technological advances and step changes in the above single-scale models and then to integrate and validate the modelling efforts across the multi-scale range. The current challenge facing modelling of weld hot cracking is the lack of a physically based modelling approach that incorporates the formation of the weld pool, the advance of the solidification interface, element segregation at the grain boundary and their interaction with the welding process parameters and mechanical constraints that arise from the geometry of the work-piece.

With responsibility for the **experimental** work of this project, you will study the microstructure and chemistry of various welding alloys prepared by the project partners. **State-of-the-art (S)TEMs** and **atom probes** will be used to obtain high-resolution data of the chemistry and structure of the interfaces. Techniques and strategies will be further developed for an accurate quantification of the microstructural regions of interest. Together, these techniques will provide information about segregation, structure and phase evolution that can be compared directly with the predictions of the MINTWELD multi-scale models.

You should have a doctorate in materials science, physics or a related discipline. You **must** be an **experienced** user of either the **(S)TEM** (with special interest in **quantitative nanoanalysis**), the **atom probe** or, ideally, both techniques. Experience in **sample preparation** (mechanical polishing and **FIB**) is also required. Evidence of a strong publication record commensurate with your stage of career is expected. Proven ability to identify research objectives and meet agreed deadlines, self-motivation, flexibility, and assistance to ongoing research work are essential. Excellent written and communication skills in English and the ability to work effectively as part of a team are required, as is willingness to travel for short periods to work with the European collaborators.

Further particulars, including instructions which must be read before applying for this post, are available from the web-site: <http://www.materials.ox.ac.uk> or from Mrs K Fewings, Department of Materials, University of Oxford, Parks Road, Oxford OX1 3PH (email: posts@materials.ox.ac.uk), or telephone 01865 273680 (post reference **DJ09/018**). The closing date for applications is **8 January 2010** with interviews currently planned for the week beginning 8 February 2010.