

Institute for Materials Research
School of Process, Environmental and Materials Engineering
University of Leeds

Fully-funded*, 42-month PhD opportunity for a UK or EU student to work on the EPSRC-funded project: “Fundamentals of Current and Future Uses of Nuclear Graphite”

This project is part of a novel and exciting major collaborative research initiative between the Universities of Leeds, Manchester, Nottingham, Salford and Sussex

Project outline: Graphite is a key component of most UK operational nuclear reactors as well as for proposed safer, more efficient high temperature reactors for energy generation, e.g. to make the clean fuel, hydrogen. Graphite acts as a moderator to slow neutrons down, making them more effective for nuclear fission but, in doing so, it becomes damaged, more porous and its individual crystallites change their shape; these changes govern reactor lifetime and are carefully monitored. However, this new interdisciplinary research collaboration aims to pursue a multi-scale approach using the latest theories, instrumentation and computer models to predict and inter-relate nano-, micro- and macro-scale changes in the graphite, so that we can better gauge future reactor life expectancy in the long-term. Within this programme, the PhD research project at Leeds will be under the supervision of Dr. Aidan Westwood, Dr. Andrew Scott and Prof. Rik Brydson. It will involve characterisation of graphite materials to examine the effects of irradiation and annealing at both nanostructural scale (TEM/EELS) and microstructural scale (XRD, Raman, gas sorption, thermal AFM), along with computer modelling of TEM/EELS to match experimental and theoretical results.

Minimum academic requirements: A good first degree (equivalent to a UK upper second class honours degree) from a prestigious institution is required. Candidates must also meet the University's English language requirements.

* Subject to formal confirmation of currently received notification of EPSRC grant funding.

The maintenance stipend for academic year 2010-11 is £13,600.

Please contact Dr. Aidan Westwood (a.v.k.westwood@leeds.ac.uk) for enquiries about the project.