3.5 Years PhD Studentship available for September 2019 although an earlier start date may as possible.

**Department:** Engineering

**Supervisors:** Prof. Bo Chen and Prof. Hongbiao Dong

**Eligibility:** UK/EU/International graduates with the required entry requirements

**Project Title:** Microstructural Characterisation of thermally aged and creep-fatigued steels

**Project Description:**

The key degradation mechanisms for the high-temperature nuclear reactors is the creep fatigue of steel components. When structural materials (e.g. Type 316LN stainless steels) are used at high temperature, thermal ageing and inelastic deformation lead to changes in their microstructures [1]. The creep and creep-fatigue performance of structural materials are limited by the degradation of microstructures. The underlying need is to develop improved understanding and predictive models of the evolution of the key microstructural features which control long-term creep performance and creep-fatigue interaction.

The aim of this PhD work is to use advanced materials characterisation techniques covering different length-scales to understand microstructural degradation as a result of high-temperature service for creep-resistant steels.

This project is partly funded by EPSRC through the SYNERgy programme. You will need to engage with all the project partners that particularly include Universities of Oxford and Manchester. The PhD candidates will have full access to all high-end microstructure characterisation facilities, mechanical testing facilities, and the UK’s word-leading neutron and synchrotron X-ray large-scale facilities. This project also comes with financial supports for attending international meetings/workshops.

**References:**


**Funding details:** This PhD studentship provides a stipend and tuition fee waiver for 3.5 years. The fee waiver will also cover full overseas fees. The stipend is a standard RCUK rate which for 2018/9 this will be £14,777 per year.
**Entry requirements:**

Applicants are required to hold/or expect to obtain a UK Bachelor Degree with 2:1 or better, or overseas equivalent, in materials, mechanical engineering or relevant subject area.

The University of Leicester English language requirements apply where applicable.

In addition, successful applicants should meet the following:

- Familiar with mechanics of materials, preferably with some experience of analytical materials modelling
- Or familiar with the physical metallurgy of materials and have basic knowledge of microstructural characterisation
- A basic computer programming/coding skill

**How to apply:**

You should submit your application using our online application system.

Apply for **Full Time Campus Based / Engineering Research**

In the funding section of the application please indicate you wish to be considered for **Prof Bo Chen’s Studentship**

In the proposal section please provide the name of the supervisor and project title. You do not need to submit a research proposal but you do need to provide a personal statement detailing why you what to be considered for the PhD.

**Project / Funding Enquiries:** engineeringpgr@le.ac.uk

Application enquiries to pgradmissions@le.ac.uk