Applications are invited for a research studentship in the field of fracture mechanics leading to the award of a PhD degree. The post is supported by a bursary and fees (at the UK/EU student rate) provided by the EPSRC or a stipend enhancement from EDF Energy. EPSRC candidates should fulfil the eligibility criteria for the award. Please check your suitability at the following website: [http://www.epsrc.ac.uk/skills/students/help/Pages/eligibility.aspx](http://www.epsrc.ac.uk/skills/students/help/Pages/eligibility.aspx)

Industrial engineering components operating at high temperature can exhibit time dependent creep strain and damage. Suitable levels of fracture resistance must be demonstrated in these components (such as UK nuclear plant components) over the entirety of their lifetime to ensure structural safety. The stress-strain and failure properties of such components can change with time as a result of creep strain accumulation and thermal ageing effects. In addition, physical creep damage can develop in the form of cavitation and micro-cracking. The impact of such creep strain and damage on a component's resistance to crack growth by creep, fatigue and ductile mechanisms needs to be understood. Accelerated creep testing in the laboratory requires tests to be performed at relatively high loads which can also generate significant plastic strains in test samples, the effects of which also needs to be understood to enable the transfer of test results to plant components.

The aims of this project are to determine the effects of prior inelastic (creep and plastic) strain and damage on the crack growth behaviour by creep, fatigue and ductile crack growth mechanisms in Type 316H steels. The PhD will involve the development of novel experimental test techniques and numerical modelling to describe and predict the influence of inelastic strain and damage on the fracture behaviour of Type 316H steel and to propose methods for including the effects of inelastic damage into Industrial defect assessment procedures.

This PhD is part of the EDF Energy High Temperature Centre at Imperial College London and will receive supervision from EDF Energy in addition to academic supervision from Dr Catrin Mair Davies.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. You will have a 1st class or 2:1 honours degree in mechanical engineering or a related subject, and an enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. An interest in fracture mechanics is essential. Good team-working, observational and communication skills are essential.

To find out more about research at Imperial College London in this area, go to: [http://www3.imperial.ac.uk/mechanicalengineering](http://www3.imperial.ac.uk/mechanicalengineering)

For information on how to apply, go to: [http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/](http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/)

Interested applicants should send an up-to-date curriculum vitae to Dr Catrin Mair Davies catrin.davies@imperial.ac.uk. Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Closing date: until post filled
Imperial Managers lead by example. Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people.