



Title: Structural Integrity for Nuclear Applications

Type of award PhD Research Studentship

Department Mechanical Engineering

Scholarship £18,000 p.a.

Duration 3.5 years

Eligibility Home UK only

Deadline Open until filled

PhD Topic Background/Description

Thermal and residual stresses can compromise the structural integrity of mechanical components. This is a crucial consideration in nuclear reactor design, where safety-critical components may be affected. During this studentship you will work in the Solid Mechanics Research Group at the University of Bristol to study the interaction between thermal/residual loading and fracture in engineering alloys. You will investigate fundamental mechanisms of elastic-plastic fracture and apply this knowledge to more accurately predict the failure of nuclear reactor components. This work will require a broad range of experimental and modelling techniques including neutron diffraction and synchrotron X-ray diffraction at national facilities. The 3.5-year studentship is offered in partnership with Frazer-Nash Consultancy and the Ministry of Defence and is open to UK citizens only for security reasons.

Further Particulars

Bristol is among the leading universities undertaking research and teaching in nuclear energy and related technologies. Home to both the [South West Nuclear Hub](#) and the [Bristol-Oxford Nuclear Research Centre](#), students will form a cohort connected to a vibrant and growing interdisciplinary nuclear research community. Group-wide meetings will be held on a regular basis to ensure a technical appreciation of all the projects within the programme and a broad appreciation of the different research disciplines: **materials science**, **structural modelling** and **non-destructive evaluation**.

Candidate Requirements

We are looking for an enthusiastic student with either a Masters or high 2:1 honours degree in Mechanical Engineering, Materials Science or a related field. Basic skills and knowledge required include engineering stress analysis.

Scholarship Details

Scholarship covers full UK PhD tuition fees and a tax-free stipend of £18,000 p.a. for 3.5 years.

Informal enquiries

For informal enquiries, please email Dr Harry Coules, harry.coules@bristol.ac.uk

For general enquiries, please email ggen-pgrs@bristol.ac.uk

Application Details

To apply for this studentship submit a PhD application using our [online application system](https://www.bristol.ac.uk/pg-howtoapply)
[www.bristol.ac.uk/pg-howtoapply]

Please ensure that in the Funding section you tick “I would like to be considered for a funding award from the Mechanical Engineering Department” and specify the title of the scholarship in the “other” box below with the name of the supervisor Professor Chris Truman.

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