Imperial College London
Department of Materials

PhD Studentship in Mechanical Testing of Ceramic Matrix Composites

Duration: 36 months (starting on 1st October 2017)

Supervisors: Professor Eduardo Saiz and Dr Nasrin Al-Nasiri

The Department of Materials at Imperial College London, in collaboration with Rolls Royce, is looking for an outstanding candidate to undertake a PhD project in the field of Ceramic Matrix Composites for the next generation of aero-engines. The studentships include fees and a stipend of £16,553 available to candidates who are ordinary residents in the UK or EU nationals for the duration of 3 years.

A major breakthrough in gas turbine’s performance (cycle efficiency, reduce noise and emissions) requires a new generation of structural materials having an operative temperature higher than the alloys currently used. Ceramic matric composites (CMCs) exhibit superior high temperature strength and durability that will revolutionize the new generation of engines. In addition, the low density of CMCs allows weight savings of up to 30% compared to Ni-based alloys thus leading to simple and compact design. CMCs have reached the degree of maturity that allows them to be used for the next generation of gas turbines. Understanding the failure mechanisms of CMMs and how their mechanical properties relate to their structure is now essential to ensure the integration of CMCs in practical applications and to develop a new generation of materials with improved properties. The objectives of this project are:

To develop mechanical testing methodologies that will enable an accurate and reliable characterization of the fracture behaviour of CMCs

To combine systematic mechanical testing and structural characterization in order to develop a deep understanding of the parameters that control fracture and the models needed to support the design of new materials.

The qualified candidates will join a dynamic research team with a research focus on ceramics fabrication and performance in the Center for Advanced Structural Ceramics in the department of Materials at Imperial College London. Applicants should have knowledge in one or more of: ceramics microstructures, electron microscopy or mechanical testing. Good teamwork and communication skills are essential. In addition, the candidates should have (or be expecting to obtain) a first degree (1st class or upper second class) in materials, mechanical engineering or a relevant subject.

For more information please contact Prof Eduardo Saiz (e.saiz@imperial.ac.uk) or Dr. Nasrin Al Nasiri (n.al-nasiri10@imperial.ac.uk).

How to apply:

The prospectus, entry requirements and application form (under ‘how to apply’) are available at: http://www.imperial.ac.uk/pgprospectus

Applicants should send a CV and covering letter and will be required to complete an electronic application form. It is expected that the studentship will begin by 1 October 2017.

Closing date: one month from placement

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.