Advanced Composites PhDs supported by Rolls-Royce

**Type of award**  Advanced Composites PhD

**Department**  EPSRC Centre for Doctoral Training in Composites Science, Engineering and Manufacturing. This is based in the School of Civil, Aerospace and Mechanical Engineering.

**Scholarship Details**  Funding is available for UK/EU/International students covering tuition fees and a tax-free stipend at the UKRI doctoral stipend level (expected to be £15,609 in 2021/22) topped up to a minimum of £17,109. The PhD comes with a generous allowance for equipment, software and conference travel.

**Duration**  4 years

**Eligibility**  Home/EU and international applicants

**Start Date**  September 2021

**PhD Topic Background/Description**

Collaborative PhD projects between the University of Bristol and Rolls-Royce are available as follows:

- **Repeated low energy impacts**
  In service, aerospace composite components are subject to a multitude of seemingly minor impact threats every day, for example, small runway debris or hailstones. Over a part’s lifetime such impacts may have detrimental effects. This project seeks to experimentally and numerically investigate the effects of repeated low level impacts.

- **Ceramic Matrix Composites (CMC) Oxidation modelling**
  CMCs are materials that are used in high temperature applications. Therefore, as well as thermo-mechanical loads and damage, they also encounter environmental degradation. This project will develop numerical models for this environmental degradation and its interaction with mechanical damage modes for CMCs.

- **Strain energy release rates of real fracture surfaces**
  Delamination is a major composites failure mode, characterised by strain energy release rate, measured using small coupon tests. In real structures however the failure is more complex, being affected by factors such as ply angles, friction and environmental and rate effects, and length scale. This project aims to better understand structural scale delamination failure mechanisms and how to account for this in numerical models.

Funding is available for two of the three project descriptions above.

The four-year Advanced Composites PhD programme is based in the EPSRC Centre of Doctoral Training in Composites Science, Engineering and Manufacturing. It comprises one-year of innovative taught
components and a three-year research project (as specified above). The taught components will allow engineering graduates to broaden their composites and scientific knowledge or fast-track graduates with science and mathematics backgrounds to acquire core engineering skills, before specialising in industrial application.

For more information on the programme structure and the opportunities available to you on this degree please visit the CDT website.

**Further Particulars**

**Candidate Requirements**
We’re looking for exceptional students, with at least a high 2:1 Honours degree, from across all engineering and science subjects. See international equivalent qualifications on the International Office website.

If English is not your first language, you need to meet this profile level:

**Profile E**
Further information about English language requirements and profile levels.

**Informal enquiries**
For enquiries, please email the Centre for Doctoral Training - composites-cdt@bristol.ac.uk

**Application Details**
To apply for this studentship, submit a PhD application using our online application system. [www.bristol.ac.uk/pg-howtoapply]

Please select PhD Advanced Composites on the Programme Choice page and enter details of the studentship when prompted in the Funding and Research Details sections of the form.

**Closing date for application:** 22 March 2021

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