

Multi-scale modelling of the effect of defects and features in 3D woven composites

Type of award PhD Research Studentship

Department Aerospace Engineering

Scholarship Details Minimum £15,285 p.a. (£15,609 2021/22) subject to eligibility status and confirmation of award.

Duration 3.5 years

Eligibility Home/EU (UK settled status) with permanent UK residency

Start Date Available now

PhD Topic Background/Description

3D woven composites provide enhanced mechanical performance compared to conventional composites in terms of delamination resistance and impact performance. Consequently, 3D woven composites are seeing growing interest for applications in the aerospace, automotive and energy sectors. However, the complex internal architectures of these materials can be challenging for conventional modelling approaches which led to the development of novel multiscale modelling approach dedicated to 3D composites. Our research group is at the forefront of research in multiscale modelling and manufacturing simulation of 3D woven composite structures. The aim of this project is to employ state of the art multiscale modelling approaches to investigate the effect of the internal fibre architecture on the mechanical performance of 3D woven composite structures. This project is aligned with the multi-million-pound EPSRC CerTest project on Certification for Aerospace Design: Reshaping the Testing Pyramid dedicated to developing novel multiscale modelling approaches for use in certification of aerospace structures.

The project will be based in the [Bristol Composites Institute \(ACCIS\)](#), a world-leading research centre at the heart of the UK Government Composites Strategy. The institute has over 150 researchers and works closely with the £60M National Composites Centre, which is a wholly owned subsidiary of the University engaged with industry to fully exploit and develop composites technology.

Further details of our composites research can be found via www.bris.ac.uk/composites/research and for CerTest via <https://www.composites-certtest.com>

Further Particulars

Candidate Requirements

Applicants must hold/achieve a minimum of a Master's degree (or international equivalent) in a science, mathematics or engineering discipline. Applicants without a Master's qualification

may be considered on an exceptional basis, provided they hold a first-class undergraduate degree. Please note, acceptance will also depend on evidence of readiness to pursue a research degree.

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](#).

Scholarship Details

Minimum £15,285 p.a. (£15,609 in 2021/22) plus an industrial top-up (tbc) subject to eligibility status and confirmation of award.

For EPSRC funding, students must meet the [EPSRC residency requirements](#)

Informal enquiries

For questions about the **research** topic please contact Professor Stephen Hallett (Stephen.hallett@bristol.ac.uk) or Dr Bassam El Said (bassam.elsaid@bristol.ac.uk)

For questions about **eligibility and the application** process please contact CAME Postgraduate Research Admissions came-pgr-admissions@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 ensure that in the Funding section you tick “I would like to be considered for a funding award from the Aerospace Engineering Department” and specify the title of the scholarship in the “other” box below along with the name of the supervisor. Interested candidates should apply as soon as possible.

Deadline for applications: **15 May 2021**.

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