## Composite Structural Housing with Integrated Thermal Management

<table>
<thead>
<tr>
<th><strong>Type of award</strong></th>
<th>Advanced Composites PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department</strong></td>
<td>EPSRC Centre for Doctoral Training in Composites Science, Engineering and Manufacturing. This is based in the School of Civil, Aerospace and Mechanical Engineering</td>
</tr>
<tr>
<td><strong>Scholarship Details</strong></td>
<td>Funding is available for UK/EU students covering UK 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</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>4 years</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Home/EU (UK settled status) with permanent UK residency</td>
</tr>
<tr>
<td><strong>Start date</strong></td>
<td>September 2021</td>
</tr>
</tbody>
</table>

### PhD Topic Background/Description

In partnership with Leonardo Helicopters, a new PhD project titled “Composite Structural Housing with Integrated Thermal Management” will explore the options of using functional graded embedded vasculles to actively cool the composite housing of heat emitting machines such as electric motors, generators and mechanical transmissions. Thermally conductive materials and additives can be used within the composite as well as the design of the vascular network to improve heat transfer to maximise thermal dissipation per unit mass.

Some of the aspects expected to be explored as part of this project are:

- Simulation of the thermal characteristics of the composite structure.
- Design and manufacturing optimalisation of mechanical-thermal-noise and vibration performance against a specific requirement.
- The use of graded vasculles in a complex shape.
- The design, manufacture and characterisation of complex shapes using novel feedstocks with embedded vasculles.

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 fast-track graduates with science and mathematics backgrounds to acquire core engineering skills, while engineering graduates will broaden their scientific knowledge before specialising in industrial application.

The three-year research project will be jointly supervised by the academic and industrial supervisors. It
is an excellent opportunity to collaborate with a world leading research team in aerospace composites.

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](#).

**Scholarship Details**
Stipend at the UKRI minimum stipend level (£15,609 in 2021/22) plus a £1,500pa CDT top-up. The scholarship will also cover the amount of tuition fees associated with UK-based students. Funding is subject to eligibility status and confirmation of award.

Funding is open to EU applicants who have no restrictions on how long they can stay in the UK and have been ordinarily resident in the UK for at least 3 years prior to the start of the studentship (with some further constraint regarding residence for education).

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

**Informal enquiries**
For enquiries, please email the Centre for Doctoral Training - [composites-cdt@bristol.ac.uk](mailto:composites-cdt@bristol.ac.uk)

**Application Details**
To apply for this studentship, submit a PhD application using our [online application system](http://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 applications:** 11th June 2021

[Apply now](#)