

## Title: Energy Sensing for Advanced Manufacturing

*Type of award* PhD Research Studentship

*Departments* Mechanical & Aerospace Engineering

*Scholarship Details* Minimum £17,668 p.a. subject to eligibility and award plus a travel and consumables budget

*Duration* 3.5 years

*Eligibility* Home (UK) and EU citizens who have confirmation of UK settlement or pre-settlement status under the EU Settlement Scheme and Overseas

*Start Date* Anytime from October 2022 to March 2023

### PhD Topic Background/Description

Sustainability is a priority for the UK to achieve its pledge to reduce greenhouse emissions by at least 68% by 2030 and achieve net zero by 2050. Advanced manufacturing will play a major role in delivering this green industrial revolution by engineering the new aircraft for zero-emission flight, off-shore wind turbines for carbon-free power generation, and hydrogen storage tanks for surplus energy generated from renewable sources, among many others.

Advanced manufacturing such as in advance composite manufacturing and 3D printing/additive manufacturing involve involves major use of energy and natural resources. With diverse processes requiring various quality and thus, energy requirements, it is not surprising that comprehensive, well-founded data and understanding of the energy requirements of advanced manufacturing are currently missing.

This project will address the current research gap by developing new in-process energy sensing techniques and systems that will collect data throughout every stage of the production process, integrating key digital technologies such as Big Data, Artificial Intelligence/Machine Learning, Cloud Computing, and Cyber-Physical Systems. The outputs of the project will be optimised advanced manufacturing process for energy and sustainability that delivers the vital performance and quality requirements for the green industrial revolution.

The successful PhD candidate will join a multidisciplinary team of academics across the departments of Mechanical and Aerospace Engineering, working alongside Post-Doctoral Research Associates with access to state-of-the-art equipment. It offers opportunities for engagement with the National Composites Centre and our extensive group of industrial partners. We expect the candidate to be working with leading international collaborators, such as the across the UK and Europe on collaborative projects, whose outcomes we will disseminate nationally and internationally.

### 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](#).

We are looking for a talented, enthusiastic researcher to join our team and carry out research into the fascinating overlap between advanced manufacturing, energy sensing, and digital technologies. They will have a good understanding of engineering, and a desire to learn new skills and methods. They will contribute their own ideas, communicate their research to others and be enthusiastic about creating something new, interesting, and useful in their work. The successful candidate will be based at the Engineering Systems, Design and Innovation and Bristol Composites Institute research groups, two world-leading research groups at the heart of the UK Government Strategy. The researcher will have access to state-of-the art equipment, opportunities to engage with industry, and the chance to work with leaders in the field.

## Scholarship Details

For eligibility and residence requirements please check the [UKRI UK Research and Innovation](#) website.

## Informal enquiries

For questions about the **research** topic, please contact [Dr Maria Valero](#) and [Dr James Kratz](#)

For questions about **eligibility and the application** process please contact **CAME** Postgraduate Research Admissions [came-pgr-admissions@bristol.ac.uk](mailto: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](http://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.