

PhD Studentship: EPSRC Future Composites Manufacturing Research Hub: Technologies Framework for Automated Dry Fibre Placement (ADFP)



Reference ENG1068
Apply by Open until filled
Department Engineering

Project Description:

Applications are invited for fully funded PhD studentships in the Composites Research Group at the University of Nottingham. There are currently 2 available positions, which are being funded by the EPSRC Future Composites Manufacturing Research Hub (<http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/P006701/1>). This project is part of a Hub core programme in collaboration with the University of Bristol to develop improved understanding of dry fibre automated fibre placement technologies. ADFP is a relatively new technology and many challenges remain, primarily around the fundamental understanding of processing parameters, such as temperature, feed rate and compaction pressure. Through tack characterisation of tow materials matched with rheological data for the binder, a fundamental understanding of the functional mechanisms behind surface interactions during dry tow placement will be developed, leading to predictive models for the interdependency of processing temperature and rate to obtain optimal adhesion levels of the binder. The capability to successfully infuse large structures will also be improved by tailoring the preform design by engineering tow gaps to form a network of dual flow capillaries without compromising structural performance. Optimal lay-up strategies for faster and defect-free infusion will be investigated through geometric modelling (TexGen) coupled with commercial flow modelling software and optimisation frameworks.

Supervisor: Dr Thomas Turner

Start Date: Available now

Eligibility: UK, EU, International

Duration of award: 3 years

Successful applicants will be based at Nottingham and will:

- Work directly with leading academics and industrial partners from the composites supply chain
- Have the opportunity to undertake a 3 month secondment with an industrial partner
- Have the opportunity to spend up to 3 months visiting one of 20 international research institutions
- Have access to taught elements of the Industrial Doctorate Centre (IDC) in Composites Manufacture
- Receive a travel and consumables allowance to support the research project

Entry Requirements:

Applicants should hold or expect to obtain a first-class or upper second-class Honours degree or equivalent in a relevant discipline, such as engineering or physics. Students with a materials background are particularly encouraged to apply. Candidates should be self-motivated and capable of studying under pressure to meet deliverables. They should also have good communication skills for regular interaction with other stakeholders. Previous experience in numerical modelling (FEA, Matlab, Maple etc.) and strong programming skills would be advantageous.

Funding:

Successful applicants will receive a tax free bursary of up to £14,296 p.a. and tuition fees for three years, subject to satisfactory research progress. This level of funding is for UK and EU applicants, although international students are eligible to apply with their own funding. Tuition fees (£19,120 p.a.) for international students will be paid, but no stipend is offered. Candidates should be available to start as soon as possible.

For further information please contact Dr Thomas Turner, T: +44 (0) 0115 7486164, E: thomas.turner@nottingham.ac.uk

Online applications can be submitted via web <http://www.nottingham.ac.uk/pgstudy/how-to-apply/apply-online.aspx>