

## High Performance Electrical Insulation Coatings for Next Generation Additively Manufactured Electrical Machines

*Type of award* PhD Research Studentship

*Department* Electrical and Electronic Engineering

*Scholarship Details* Minimum £16,062 p.a. subject to eligibility status and confirmation of award.

*Duration* 3.5 years

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

*Start Date* 20 September 2022

### PhD Topic Background/Description

Are you a materials engineer or chemistry graduate looking to apply your background to next generation electrical technologies in pursuit of Carbon Net Zero?

We are seeking a motivated PhD candidate to join The Electrical Machine Works, University of Bristol, to develop high-performance electrical insulation coatings and coating processes for metal 3D printed components. The successful candidate will work in a multi-institution, multi-disciplinary team across material science, process development, design for Additive Manufacture (AM) and experimental testing with opportunity for industrial collaboration and commercialisation.

A multi-disciplinary supervisory team will provide training and project supervision. The student will be involved in the following activities (non-exhaustive):

1. Learning relevant underpinning material science, chemistry, and application context
2. Development of mechanical-, chemical- and electro-polishing post-processes to control AM part surface roughness
3. Undertake surface, bulk, and material property characterisation via, for example, Scanning Electron Microscope (SEM), Computed Tomography (CT), Optical profilometry, Grain structure analysis and electrical conductivity measurement
4. In-depth study and development of coating technologies ranging from organics to inorganics
5. Characterisation of coatings via optical, physical, and chemical means
6. Review and development of highly controlled automated coating processes of complex AM parts
7. Collaboration with industrial and academic partners within The Electrical Machine Works
8. Regular dissemination of findings via internal and external meetings and events
9. Publication of findings at appropriate international conferences and in journal proceedings
10. Play an active role in the research group community for your own development and development of others.

URL for further information: <https://www.bristol.ac.uk/engineering/research/em/phd-opportunity-1/>

## Further Particulars

### Candidate Requirements

Applicants must hold/achieve a minimum of a Masters degree (or international equivalent) in Chemistry, Material Science or a related discipline. Applicants without a Masters 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

Stipend at the UKRI minimum stipend level will also cover tuition fees at the UK student rate. Funding is subject to eligibility status and confirmation of award.

### Eligibility

To be eligible for a full award the student must 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). To be considered for funding Candidates must:

- Be a UK National (meeting residency requirements)
- (or) Have settled status
- (or) Have pre-settled status (meeting residency requirements)
- (or) Have indefinite leave to remain or enter.

### Informal enquiries

For questions about the **research** topic please contact Dr Nick Simpson at [nick.simpson@bristol.ac.uk](mailto:nick.simpson@bristol.ac.uk)

For questions about **eligibility and the application** process please contact SCEEM Postgraduate Research Admissions [sceem-pgr-admissions@bristol.ac.uk](mailto:sceem-pgr-admissions@bristol.ac.uk)

### Application Details

Prior to submitting your application, please contact the academic listed to discuss your research proposal and see if it aligns with their current research. No indication of an offer can be made until we receive your completed application.

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 **Electrical Engineering Department**” and specify the title of the studentship in the ‘free text’ box below along with the name of the supervisor. Interested candidates should apply as soon as possible.