Nottingham Trent University - School of Science & Technology

Competition Funded PhD Project on the Combustion of Metal Powder for Heat and Power.

The School of Science and Technology at Nottingham Trant University (NTU) United Kingdom, has a competitive fully-funded PhD studentship entitled "*Metal powder as a regeneratable sustainable zero-carbon fuel for heat and power*". The position belongs to the Imaging, Materials and Engineering Centre (IMEC) through the NTU PhD Studentship Scheme 2024.

Here is a link to the position advertised on the university's website:

https://www.ntu.ac.uk/study-and-courses/postgraduate/phd/phd-opportunities/studentships/school-of-science-and-technology-studentships/metal-powder-as-a-regeneratable-sustainable-zero-carbon-fuel-for-heat-and-power

NOTE: Applications must be submitted through NTU's third-party company SurveyMonkey.

https://ntustudentship.smapply.io/prog/2024_ntu_phd_studentship_scheme/

The application deadline is **12 noon (GMT) on Friday 12 January 2024**.

Overview

Very recently, regeneratable metal fuels came into the spotlight as a promising green and sustainable solution that meets the decarbonisation challenges. Metal powders such as Iron and Aluminium powders have a high energy density and can act as a major carbon-free energy carrier for the long-term and long-distance. They are safe, low cost, and recyclable as the oxidised (combusted) metal can be regenerated back to metal powder using renewable energy. The heat released in the combustion can be used for many applications, including district heating, and retrofitting coal power plants. Novel burners of metal powders must be developed and integrated into the existing energy systems, which requires developing fundamental understanding of the combustion of a single particle at micro and nano scales. The team at the Engineering Department at Nottingham Trent University designed a unique particle burner capable of burning a single metal particle or a group of particles suspended in the air by ultrasound effect. The burner benefits from the static and free state of the particles to conduct the experiments. This overcomes the need to conduct experiments in micro-gravity, which are very expensive and require sophisticated equipment. The overarching aim of this project is to answer many outstanding unknowns regarding the combustion characteristics of metal particles, such as burning temperature, combustion time, and light emission. The answers will have a huge impact on stakeholders.

The application process

You can download our full applicant guidance notes for more information, including the assessment criteria for selecting successful candidates.

Eligibility criteria

The 2024 Nottingham Trent University PhD Studentship Scheme is open to all UK, EU, and Overseas students who meet the academic and scheme eligibility criteria: to check that you are eligible to apply, please consult the link below.

https://www.ntu.ac.uk/study-and-courses/postgraduate/phd/phd-opportunities/studentships/how-to-apply-for-a-studentship

Supervisory Team:

Dr Zak Mansouri (Lead supervisor - DoS) – Senior Lecturer in Aerospace Engineering

Professor Mohsen Rahmani (Co-Supervisor) – Professor in Nano-technology, Optics and Photonics

Professor Rob Morris (Co-Supervisor) – Professor of Physics

For further details about the position, please contact the lead supervisor.