

POSTGRADUATE SCHOLARSHIPS/PROJECTS

PROJECT/SCHOLARSHIP TITLE
College of Engineering: Self-funded Phd Project: Applying nanotechnology to solve environmental problems. The conversion of waste products into carbon nanomaterials for renewable energy
FUNDING PROVIDER(S)
Self-Funded
SUBJECT AREA(S)
Engineering, Physics, Chemistry
PROJECT START DATE(S)
Applications accepted throughout the year
KEY INFORMATION:
<p>This is a description of self-funded PhD opportunities that are available at Swansea University's College of Engineering which are based in the Energy Safety Research Institute (ESRI).</p> <p>The aim of this project is to positively impact the environment both locally and globally. This will be done by taking carbon waste and turning it into carbon nanotubes (CNTs). CNTs can be used to transmit electricity under a wide range of temperatures, they are much lighter so they offer mass savings, and specialized forms are ballistic conductors which can transmit electricity with near zero loss.</p> <p>Solid waste products such as plastics can be increasingly difficult to recycle, but they can be repurposed to form CNT electrical conductors. Other waste materials such as carbon dioxide is the most relevant greenhouse gas, and it has also been positively shown to be an effective feedstock for the synthesis of CNTs. They can be formed by either using chemical vapour deposition (CVD) or by using electrochemistry, this allows the researcher an opportunity to explore multiple pathways to success while also developing an expanded set of technical skills.</p> <p>This project has three goals.</p> <ol style="list-style-type: none"> 1. Firstly, to explore the full range of materials that will have the greatest impact when used as feedstock for nanotube growth. 2. Second, to improve the conversion rate of waste carbons into carbon nanotubes. 3. Third, to integrate the technology into current industrial standards and practices. Industrial partners, collaborators and stakeholders will be sought in order to increase the impact of this research. <p>The successful PhD student will be expect to present their work at relevant conferences and meetings with stakeholders, and to assist in the publication of journal articles.</p> <p>There are a range of specializations that can be pursued and will be agreed according to the applicant's abilities and interests. These specializations range from (but are not limited to):</p> <ul style="list-style-type: none"> • chemical recycling of plastics • chemical recycling of rubber • chemical recycling of composites • conversion of microplastics to carbon nanomaterials • conversion of carbon dioxide to carbon nanomaterials • conversion of greenhouse gasses to carbon nanomaterials • electrical characterization of products • design and construction of ancillary devices • carbon nanotube amplification and cloning • formation of ultralong single walled carbon nanotubes • determining the impact of nanomaterials on the environment • CFD analysis of fluid behaviour in high velocity laminar flow environments

The details of each specialization can be discussed prior to starting.	
WHO IS ELIGIBLE TO APPLY?	
Are UK/EU/International students eligible to apply? All	UK/EU/International
Qualifications required	2.1 BSc, or equivalent MSc. We would normally expect the academic and English Language requirements to be met by point of application. An IELTS score of 6.5 or equivalent is required if your first language isn't English.
Subject backgrounds considered	Engineering, Physics, Chemistry, Mathematics, Biology
Experience/other skills & qualities required (if any)	<ul style="list-style-type: none"> • Candidates must be eager to learn, be willing to fail, and not be deterred by failure. • Candidates will be preferred if they have a first, or upper second class honours or a Master's degree (with Merit) in a relevant discipline such as mechanical engineering, chemical engineering, chemistry, physics, or a related science. • Swansea University is an equal opportunity employer, and we welcome applications regardless of gender, race, or self-identity.
FUNDING DETAILS	
Tuition fees: Does the funding cover tuition fees?	<u>UK/EU students:</u> Not covered <hr style="border-top: 1px dashed black;"/> <u>International students:</u> Not covered
Stipend: Does the funding provide a stipend?	No
Funds for other expenses: (e.g. conferences, fieldwork)?	No Please note that this is a self-funded PhD project. However, applicants will be encouraged and supported during their PhD to apply for travel grants, fellowships, and any relevant awards or funding that become available.
APPLICATION CLOSING DATE	
Applications accepted throughout the year	
METHOD OF APPLICATION	
What do applicants need to complete in order to apply e.g. College scholarship application form/CV and covering letter/Research proposal?	<p>Informal enquiries about this project are welcome and may be directed via email.</p> <p>Should you wish to apply then please send the following to Dr Alvin Orbaek White (Alvin.OrbaekWhite@Swansea.ac.uk)</p> <ul style="list-style-type: none"> • CV, include details of any current and relevant employment or work experience (also include contact details for a reference) • A cover letter stating why the project you are applying for particularly matches your skills and experience and how you would choose to develop

	the project and in which specialization you are most interested to solve
Who should applications be sent to? <i>Please note: research scholarship applicants should be directed to a relevant member of academic staff or departmental administrator within the College, NOT the online applications portal.</i>	Name: Dr. Alvin Orbaek White Email address: alvin.orbaekwhite@swansea.ac.uk
CONTACT DETAILS FOR ENQUIRIES	
Name	Dr. Alvin Orbaek White
E-mail	Alvin.OrbaekWhite@Swansea.ac.uk
Telephone	
WEB LINK for further info (where relevant)	
https://www.swansea.ac.uk/staff/engineering/a.orbaek.white	