

<u>Information on Postgraduate Research Scholarship - Ref: FES-PhD-2324-01</u>			
Faculty:	Engineering and Science	Department:	Computing and Mathematical Sciences
Lead Supervisor:	Dr Andrew Kao		
Project Title:	Controlling Additive Manufacturing with Ultrasound		
Project Description:	<p>Additive Manufacturing (AM), also known as 3D printing, is an emerging technology that allows for on-demand direct fabrication of complex parts with far reaching applications in many sectors including biomedical, aerospace and energy. However, AM components suffer from microscopic defects such as porosity from gas bubbles, leading to voids and ultimately reduced performance.</p> <p>This project aims to look at how the application of ultrasound can be used to enhance the AM process. Ultrasound will interact with microscale bubbles causing degassing, hence removing porosity and/or implosion (cavitation) of these bubbles, which can disrupt the underlying metal crystalline formation leading to improved properties.</p> <p>The PhD will primarily be computational, utilising state of the art numerical techniques to understand and predict the effect of Ultrasound. It will be closely aligned to the EPSRC project “Tailored Microstructures via Thermoelectric-Magnetohydrodynamics for Additive Manufacturing (TEAM)”. As part of collaboration with University College London (UCL) there will be opportunities to work alongside world experts to conduct in situ X-ray imaging experiments at Diamond Light Source and the European Synchrotron Radiation Facility. More details of the project can be found here: https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/W032147/1</p> <p>The ideal candidate would have an interest in materials science and ambition to help develop stronger, lighter materials for the future.</p>		
Duration:	3 years, Full-Time Study		
Bursary available (subject to satisfactory performance):			
Year 1: £18,622 plus London weighting where applicable (FT) or pro-rata (PT) Year 2: In line with UKRI rate Year 3: In line with UKRI rate			
In addition, the successful candidate will receive a contribution to tuition fees, equivalent to the university’s Home rate, currently £4,712 (FT) or pro-rata (PT), for the duration of their scholarship. International applicants will need to pay the remainder tuition fee for the duration of their scholarship.			
This fee is subject to an annual increase.			
Person Specification of Essential (E) or Desirable (D) requirements:			
Criteria:			E or D
Education and Training:			
<ul style="list-style-type: none"> 1st Class or 2nd class, First Division (Upper Second Class) honours degree or a taught master’s degree with a minimum average of 60% in all areas of 			E

assessment (UK or UK equivalent) in a relevant area to the proposed research project	
<ul style="list-style-type: none"> For those whose first language is not English and/or if from a country where English is not the majority spoken language (as recognised by the UKBA), a language proficiency score of at least IELTS 6.5 (in all elements of the test) or an equivalent UK VISA and Immigration secure English Language Test is required, if your programme falls within the faculty of Engineering and Science a language proficiency score of at least IELTS 6.5 overall with a minimum of 6.0 in all elements of the test or an equivalent UK VISA and Immigration secure English Language Test is required. Unless the degree above was taught in English and obtained in a majority English speaking country, e.g. UK, USA, Australia, New Zealand, etc, as recognised by the UKBA. 	E
Experience & Skills:	
<ul style="list-style-type: none"> Previous experience of undertaking research (e.g. undergraduate or taught master's dissertation) 	E
<ul style="list-style-type: none"> Experience in a related discipline e.g. Materials Science, Manufacturing, Ultrasonic Processing 	E
<ul style="list-style-type: none"> Experience in programming in C, C++ or Fortran 	D
<ul style="list-style-type: none"> Experience of numerical modelling techniques, e.g. computational fluid dynamics, computational chemistry, or molecular dynamics 	D
<ul style="list-style-type: none"> Experience of numerical modelling packages, e.g. OpenFOAM, COMSOL, ANSYS, STAR-CCM+ or equivalent 	D
Personal Attributes:	
<ul style="list-style-type: none"> Understanding the fundamental differences between a taught degree and a research degree in terms of approach and personal discipline/motivation 	E
<ul style="list-style-type: none"> Able to, under guidance, complete independent work successfully 	E
Other Requirements:	
<ul style="list-style-type: none"> This scholarship may require Academic Technology Approval Scheme approval for the successful candidate if from outside of the EU/EEA 	E
<ul style="list-style-type: none"> Start date is flexible but the scholarship must commence before 31th July 2024 	E
Closing date for applications:	midnight UTC on 15/9/2023
For further information contact:	Dr Andrew Kao (a.kao@gre.ac.uk)
<p>Making an application: Please read this information before making an application. Information on the application process is available at: https://www.gre.ac.uk/research/study/apply/application-process. Applications need to be made online via this link. No other form of application will be considered.</p> <p>All applications must include the following information. Applications not containing these documents will not be considered.</p> <ul style="list-style-type: none"> Scholarship Reference Number (Ref)– included in the personal statement section together with your personal statement as to why you are applying a CV including 2 referees * academic qualification certificates/transcripts and IELTS/English Language certificate if you are an international applicant or if English is not your first language or you are from a country where English is not the majority spoken language as defined by the UK Border Agency * 	

**upload to the qualification section of the application form. Attachments must be a PDF format.*

Before submitting your application, you are encouraged to liaise with the Lead Supervisor on the details above.