

Information on Postgraduate Research Scholarship - Ref: Wolfson-FES-01-25			
Faculty:	FES	Department:	Wolfson Centre for Bulk Solids Handling Technology
Lead Supervisor:	Dr Vivek Garg		
Project Title:	Influences of Tribological Properties of Powders on Process Efficiency in Automated Manufacturing Stream of Bulk Solids		
Project Description:	Solid-formed powders play a crucial role in many modern manufacturing industries, but their tribological behaviour is complex and critical to process control. In the pharmaceutical industry, forms of tablets, capsules, dry powder inhalers cover the vast majority of the £7.2Bn sales in the UK. Food (sales £79.5Bn) is another single largest manufacturing sector, total worth of £400.8Bn in sales in 2021 (Office of National Statistics). As manufacturing evolves, efficiency, effectiveness, flexibility, and sustainability (EEFS) are key, but powder variations remain poorly understood. Issues like agglomeration, flow interruption, and non-uniformity arise due to this complexity. Due to the complexity of the powders, people usually solve the problems at bulk levels and ignore any tribological behaviours in the powders, such as adhesion force varied with particle size. The research aims to further develop and exploit an advanced characterisation method (developed at The Wolfson Centre) using small quantities of powders (tens of milligrams), particularly for industries where powders are expensive and limited in early formulation stages. Previous PhD work by V. Garg and E. Ermis introduced a novel technique for measuring particle adhesion to a solid surface, but further investigation is required to understand further, such as sliding friction between particles at various conditions (e.g., humidity, lubricants, glidants). This research will deepen the understanding of the fundamental physics of particulate solids and lead to improved techniques for predicting flow behaviour in manufacturing processes, especially for improving process efficiency. Given the Wolfson Centre’s collaboration with the food and pharmaceuticals, where efficient, effective, flexible, and sustainable (EEFS) processes are essential for UK manufacturing, this work is timely and has a significant impact from initial trials to the full scale.		
Duration:	3 years, Full-Time Study		
Bursary available (subject to satisfactory performance): Year 1: £20,780 (FT) or pro-rata (PT) Year 2: In line with UKRI rate Year 3: In line with UKRI rate In addition, tuition fees will be covered for the three year study period. This fee is subject to an annual increase.			
Person Specification of Essential (E) or Desirable (D) requirements:			
Criteria:			E or D
Education and Training:			
• 1 st Class or 2 nd 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	
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 <u>and</u> obtained in a majority English speaking country, e.g. UK, USA, Australia, New Zealand, etc, as recognised by the UKBA.	E
Experience & Skills:	
Previous experience of undertaking research (e.g. undergraduate or taught master's dissertation)	E
Previous experience of Powder Technology	D
Experience of virtual tools	D
Experience of Instrumentation	D
Personal Attributes:	
Understands the fundamental differences between a taught degree and a research degree in terms of approach and personal discipline/motivation	E
Able to, under guidance, complete independent work successfully	E
Other Requirements:	
This scholarship may require Academic Technology Approval Scheme approval for the successful candidate if from outside of the EU/EEA	E
The scholarship must commence before 1st April 2026	E
Closing date for applications:	midnight UTC on 21st November 2025
For further information contact:	<i>vivek.garg@gre.ac.uk</i>
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. All applications must include the following information. Applications not containing these documents will not be considered. Scholarship Reference Number (*Wolfson-FES-01-25*)– 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 * <i>*upload to the qualification section of the application form. Attachments must be a PDF format.</i> Before submitting your application, you are encouraged to liaise with the Lead Supervisor on the details above.	

