

QUB - Mechanical and Aerospace Engineering PhD Project Description

Title: Processing of Plastics Waste Streams	
Theme: Polymer Processing	
<p>Project description: Dealing with plastics waste is now seen as one of the most pressing environmental issues facing our planet. Debris from plastics is now found in almost every environment and there are no easy solutions to solve this problem quickly. The size of the challenge is huge. Around 300 million tonnes of new plastics are produced in the world each year and this is rapidly increasing. Plastics in their many forms are essential to human life as we know it today, so solutions need to be found to turn waste plastics into useful products again so that their environmental impact is minimised. There is considerable potential to achieve this but new engineering technologies must be developed. Waste from households is now being collected in very large volumes but its composition and quality can be very variable and this makes reprocessing difficult at present. It is recognised that solutions to plastics waste must take a circular economy approach that extends from design of plastics products through to how they are used by the consumer, and how they are collected and disposed of.</p> <p>Aims and Objectives: The overall aim of this research project is to study the fundamental properties of plastic waste streams and develop new forms of manufacturing that are capable of turning this waste into useful plastics products. Potential engineering solutions may involve blending, compatibilising, reinforcing, foaming or sandwiching the waste with other materials or innovating new products or processes to exploit their unique properties. Recently some preliminary research work at the Polymer Processing Research Centre (PPRC) at Queen's University has demonstrated that blended plastic waste materials can be successfully moulded into larger products and this will be the starting point for this project. The work will be largely experimental in nature and it is expected that a number of local industrial collaborators will contribute to the project as it develops.</p>	
Key skills required for the post: Mechanical engineering (or related) background; design, analytical, practical and organisational skills.	
Key transferable skills that will be developed during the PhD: Interpersonal, self and project management, communication, leadership and technical literacy skills	
Lead supervisor:	Dr Peter Martin p.j.martin@qub.ac.uk
Other supervisor(s):	Dr Eoin Cunningham e.cunningham@qub.ac.uk
Funding mechanism:	Yet to be secured
Application closing date:	Until suitable candidate appointed.
Guaranteed stipend:	Basic stipend and any guaranteed top-up (if available). N.B. Stipend for 20-21 is not yet confirmed. Base stipend for 19/20 is £15,009.
Conditional top-up available:	
PhD students in the School may have the opportunity to apply to be demonstrators on undergraduate modules. Compensation for this can amount to in excess of £2,400 per year.	

Queens University Belfast is a diverse and international institution which is strongly committed to equality and diversity, and to selection on merit. Currently women are under-represented in research positions in the School and accordingly applications from women are particularly welcome.