

## QUB - Mechanical and Aerospace Engineering PhD Project 2019-2020

<b>Title:</b> <b>Multifunctional elastomer nanocomposites for self-healing stretchable conductors</b>	
<b>Project description:</b> Stretchable and electrically conductive materials have recently attracted significant interests from researchers in various disciplines including materials science and engineering, chemistry, physics, manufacturing engineering, electronic and electrical engineering, and bio-engineering. However, most of existing materials are either non-conductive at higher strains or non-stretchable, largely limiting the development of next-generation technologies.  This project aims to design and manufacture innovative self-healing stretchable conductors based on novel multifunctional elastomer nanocomposites and rational design of the devices for various applications such as electronic devices, energy devices, sensors, wearable medical devices and soft robotics. Novel self-healing, conductive elastomer nanocomposites will be prepared, and characterised using a range of techniques. Stretchable conductors will then be designed and manufactured, with their potential performance in a variety of applications assessed. The fundamental science underpinning the development of these materials will also be investigated.  For further information about the project, please contact Prof Biqiong Chen. Candidates who are interested in other types of polymers or polymer nanocomposites (such as biomimetic scaffolds for soft tissue repair and reconstruction, sustainable materials and/or smart materials) are also encouraged to make enquiries.	
<b>Key skills required for the post:</b> <ul style="list-style-type: none"> <li>• A minimum degree of 2:1 (or equivalent) in Mechanical Engineering, Materials Science, Chemistry, or another relevant subject.</li> <li>• Strong interests in materials research.</li> </ul>	
<b>Key transferable skills that will be developed during the PhD:</b> <ul style="list-style-type: none"> <li>• Experimental skills in materials synthesis, processing and characterisation</li> <li>• Skills in applying new materials in various industrial sectors</li> <li>• Multidisciplinary research skills</li> <li>• Project management skills</li> <li>• Presentation skills</li> <li>• Team-working skills</li> </ul>	
<b>Lead supervisor:</b>	Prof Biqiong Chen Email: <a href="mailto:b.chen@qub.ac.uk">b.chen@qub.ac.uk</a> Tel: 028 9097 4116
<b>Other supervisor(s):</b>	Dr Oana Istrate
<b>Guaranteed stipend:</b>	The scholarship is funded by EPSRC. It will cover the student's full tuition fees at the UK/EU rate and a stipend for 3.5 years (£15,009 p.a. for 2019-2020). Due to funding conditions, only UK nationals, and EU nationals who have lived in the UK for at least three years prior to the start of the PhD programme are eligible for this scholarship.
<b>Conditional top-up available:</b>	Subjected to availability, £3,000 p.a. for student with 1 <sup>st</sup> class honours degree and exceptional performance at interview.
<b>PhD students in the School have the opportunity to apply to be demonstrators on undergraduate modules. Compensation for this can amount to in excess of £2,400 per year.</b>	

*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.*