PhD studentship in Experimental Physics

A fully-funded PhD studentship is available in the Department of Physics to investigate the physical properties, and design applications of new liquid-crystalline vitrimer actuators. Liquid crystalline elastomers (LCE) are an amazing class of materials that show spontaneous (equilibrium) shape change of up to 500%, produced on heating, or light exposure. They also have the unique property of 'soft elasticity' when some shear deformations proceed without elastic resistance, which in turn leads to their remarkable properties in damping and dissipation of mechanical energy. In spite of all that, in the last 20 years there was almost no progress in application of `LCE actuators' in technology (and there were good reasons for that).

Our group have been the recognised world-leaders in the field for all that time; recently, we've made a breakthrough in the material design utilising the concept of 'vitrimers' (you may need to Google some of these keywords to get a better grasp). There is a large ERC grant supporting this research, and two new chemists (a PhD student and a postdoc) are making these new materials, which we now need to study – and design clever applications for: things like a light-driven motor, a tactile Braille display, a heliotracking filament, or a fabric woven from actuating fibres – are all on our list, but it will certainly expand.

This project is suitable for a candidate with a good first degree (Masters pass) in Physics, Physical Chemistry or Materials Science. The successful candidate would have interests, and preferably some experience in mechanics and statistical physics, as well as being able to design and carry out mechanical and rheology experiments.

Fixed-term: The funds for this post are available for 4 years

The award covers all University fees and provides a tax-free stipend of £14,777 p.a. (index linked). The studentship is available for UK and EEA students who meet the UK residency requirements. Students from EEA countries who do not meet the residency requirements may still be eligible for a fees-only award. The University has a responsibility to ensure that all employees are eligible to live and work in the UK.

The University and the Physics Department are committed to equality and diversity.

This studentship is available to start on 1 Oct 2019.

Informal enquiries should be made in the first instance to Professor Eugene Terentjev (emt1000@cam.ac.uk). To make an application, follow the procedure outlined on the Physics Department website https://www.phy.cam.ac.uk/admissions/graduate, making sure to mention the BSS research group and/or the name of Prof. Terentjev in the form.