



Position Title	PhD Studentship - Simultaneous Exfoliation and Functionalization of Graphene in <i>Water: Towards Bio-Useful Graphene</i>
Project Abstract	<p>In recently published work, we have devised a two component system that orchestrates a directed self-assembly (DSA) of fluorophore containing nanocapsules, which can self-report on dynamic changes within their local aqueous environment.</p> <p>Herein we propose that that the ability of these DSA polymeric particles to dynamically modulate emission intensity upon surface adsorption can be exploited for selective labelling graphene surfaces and that this could be achieved in conjunction with the production of graphene in water. Once NIR fluorescently functionalized, this would allow the real-time imaging of graphene bio-interactions and would serve as a model system for the adsorption of other hydrophobic entities.</p> <p>Our collaborators in the University of Manchester have extensive expertise in graphene surface analysis and will assist in performing extensive Raman and electrochemical characterisation of our exfoliated hybrid materials. SEM, TEM imaging and helium-ion microscopy to be carried out in collaboration with Prof. Gunnlaugsson. Once optimised the procedural knowledge gained to produce hybrid graphene materials in water would be applicable to a wide range of potential uses from hydrophobic drug to metal complex adsorption.</p>
Experience	The PhD position is funded for 4 years, including a monthly stipend and materials and travel budget. Applicants should hold a minimum of an honours bachelor's degree at 2:1 level or equivalent in a relevant subject such as Chemistry; Materials Science; Organic Chemistry; Chemical Biology. Candidates should have an interest in 2D materials/drug delivery.
Funding	The studentship will cover fees up to €5,500 pa and a stipend of €18,500 pa
Location	RCSI.
Closing Date	Friday 29 th June 2018
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