



QUEEN'S UNIVERSITY BELFAST

*Title of studentship	Infection-responsive biomaterials capable of self-cleaning
Value / what is covered?	Self funded
Awarding body	
Number of studentships	1
*Summary descriptive text / Example of research project	<p>A major problem associated with medical devices is infection. With infection rates of approaching 100% in some devices, ways to prevent formation of bacterial biofilm on medical device surfaces are urgently required. This project will develop methods in preventing the development of bacterial growth on polymer surfaces using a combination of strategies.</p> <p>Specifically, we will target polymeric devices such as urinary catheters and endotracheal tubes, which suffer badly from high infection rates, for improvement. The McCoy group has recently published a new way of using changes in chemical environment, such as that found at the onset of infection to trigger drug release. In this project, this technology will be developed further to exploit the changes which occur at the onset of infection to produce materials which can “self-clean” in the presence of an infection.</p> <p>Additionally, we will exploit our recent findings that a strong antimicrobial effect, which can kill resistant bacteria, is produced when light is applied to materials incorporating appropriate photosensitisers.</p> <p>The resulting next-generation biomaterials are aimed at reducing or eliminating infection, thereby reducing treatment costs and improving patient outcomes. This important project will give extensive experience as part of an internationally-funded research team.</p>
*Supervisor(s)	Professor Colin McCoy, Dr Nicola Iwrin
*Eligibility / residence Status	UK/EU and International applicants are welcome
Country	
*Start date and duration	1 October 2018 Three-year full-time PhD.
*Faculty	MHLS

*Research centre / School	Pharmacy
Subject area	Pharmacy, drug delivery, materials science
Candidate requirements / Key skills required for the post	Applicants should have a 1st or 2.1 honours degree (or equivalent) in a relevant subject. Relevant subjects include Pharmacy, Molecular Biology, Pharmaceutical Sciences, Biochemistry, Biological/Biomedical Sciences, Chemistry, Engineering, Psychology, Social Sciences or a closely related discipline. Students who have a 2.2 honours degree and a Master's degree may also be considered, but the School reserves the right to shortlist for interview only those applicants who have demonstrated high academic attainment to date
*Deadline for applications	31 January 2018
*How to apply / contacts	Potential applicants should contact Professor Colin McCoy, c.mccoy@qub.ac.uk , to discuss their potential application. Postgraduate Research applicants for Pharmacy should apply through the direct application portal https://dap.qub.ac.uk/portal/user/u_login.php
Relevant links / more information	http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/PostgraduatePositions/ http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/
Keywords for search filters	Drug delivery, antimicrobial, AMR, polymer, materials science, surface modification, surface chemistry
Training provided through the research project	The program will give specific training in polymer synthesis, drug delivery methodology, materials characterisation, microscopy, microbiology and spectroscopic techniques, including UV-visible, Raman and infrared spectroscopy. Additionally, presentation, writing and interpersonal skills will be developed
Expected impact activities	Attendance at conference, publication of scientific papers, collaboration with interested industrial partners.