***Title of studentship**	Light-activated anti-infective biomaterials for healthcare
Value / what is covered?	Fully funded 100% of UK/EU tuition fees paid and an annual stipend for UK residents only (living expenses), currently at £14,777 (to be confirmed). This 3.5 year PhD studentship, funded by the Engineering and Physical Sciences Research Council (EPSRC), commences in September 2019. Eligibility for both fees and maintenance depends on the applicants being either an ordinary UK resident or those EU residents who have lived permanently in the UK for the 3 years immediately preceding the start of the studentship. Non UK residents who hold EU residency may also apply but if successful may receive fees only.
Awarding body	EPSRC
Number of studentships	1
***Summary descriptive text / Example of research project**	The prevention and control of infection in hospitals and care homes is a high-priority area of research. Both indwelling medical devices and environmental surfaces are associated with life-threatening infections and related disease. Manufacturing facilities and food production sites also require environments where bacteria, viruses and fungi can be effectively controlled. We have recently demonstrated a method of localising light-activated photosensitisers on material surfaces, which generate highly toxic species on exposure to normal daylight and are capable of killing bacteria, viruses and fungi without inducing resistance, which is seen with many conventional drugs. The photoactive technology, which is based on the established clinical principle of photodynamic therapy, is not depleted during use, so can give long-lived, persistent resistance to infection to a wide range of materials. This project will extend the application of this technology in exciting new areas, and will explore interesting properties observed when the technology is used in combination with other species. Understanding this synergy will allow us to develop new surfaces for a range of healthcare and related settings. Applications of particular interest in this project are intraocular lenses (IOLs) inserted during cataract surgery, which can resist postoperative infection and lens

	epithelial cell migration, and protection of environmental surfaces which act as bacterial reservoirs ad sources of cross-contamination. Through development of novel polymeric systems and assessment of performance using sophisticated models of clinical environments, this interdisciplinary project will develop transformational new strategies to address the incidence of complications from IOL insertions and cross-contamination from hospital surfaces more generally.
***Supervisor(s)**	Professor Colin McCoy, Dr Nicola Irwin
***Eligibility / residence Status**	UK/EU only
Country	Northern Ireland
***Start date and duration**	1 October 2019 Funding covers a 3.5 year full-time PhD
***Faculty**	MHLS
***Research centre / School**	Pharmacy
Subject area	SMART materials, polymer science, biomaterials, infection control
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, or a closely related discipline.
***Deadline for applications**	22 May 2019
***How to apply / contacts**	Postgraduate Research applicants for Pharmacy who are interested in applying for a fully funded DFE studentship must have applied to Queen's, via the Direct Applications Portal, and submitted all required supporting documents by the closing date, which will be announced later in the Academic year. 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	Biomaterials; infection control; healthcare-associated infections; polymer science; photodynamic
Training provided through the research project	The successful candidate will receive training and develop skills in a range of techniques for development of novel surface technologies, including polymer synthesis and characterisation of the microbiological, properties of new polymer surfaces, with exciting opportunities to work with international collaborators and to present the work internationally. The student will also develop other generic research skills, such as time management, scientific writing/writing for publication, and delivering presentations.
Expected impact activities	Through development of enhanced performance surface technologies, significant impact is anticipated: • Reduced incidence of postoperative endophthalmitis and LEC migration following IOL insertion • Avoidance of bacterial resistance problems. • Improved ability for surfaces in healthcare environments to resit bacterial contamination. • Cost-savings for healthcare providers.