# PGR Studentship Information Template 2022 entry

* Please complete the template with as much information as possible.
* \*fields are essential.
* If you have information that does not have a label, please create a new row in the table for it.

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| **\*Title of studentship** | Novel poly(acrylic acid) complexes for enantioselective drug delivery and chiral separation |
| **Value / what is covered?**  | No funding is currently available; however, we welcome self-funded applications |
| **Awarding body** | N/A |
| **Number of studentships** | 1 |
| **\*Summary descriptive text / Example of research project**  | Poly(acrylic acid)s (PAA) are widely used as emulsifiers, suspending agents and viscosity enhancers within the pharmaceutical, cosmetic and food industries owing to their low cost and excellent safety profile when administered orally or applied topically. They are generally used in the form of viscous colloidal dispersions (gels) prepared by neutralising a 0.1 to 5% w/w aqueous solution with an alkali. In principle, amines having a suitable pKa value are also capable of neutralising these systems (Scheme 1); in practice, only a relatively small number of achiral amines – such as stearyl amine and triethanolamine – have been investigated. PAA systems neutralised with chiral amines have yet to be investigated. Chiral PAA gel formulations prepared in this fashion have potential applications in various aspects of drug delivery (e.g., for selective administration of one enantiomeric form of a drug from a racemic mixture) and development of new low-cost chiral separation strategies. **Scheme 1.** Top – standard neutralisation method to form viscous poly(acrylic acid) gels; Bottom – proposed use of chiral amines to prepare chiral poly(acrylic acid) gels with potential application in drug delivery and separation methods. This project – involving a partnership between leading researchers in the School of Pharmacy and the School of Chemistry and Chemical Engineering at the Queen's University Belfast – will expose the successful applicant to a diverse range of skills and techniques across the disciplines of chemistry, polymer science, analytical chemistry, drug delivery and the pharmaceutical sciences. For example, techniques such solid state nuclear magnetic resonance spectroscopy (SS-NMR), high performance liquid chromatography (HPLC), oscillatory rheology and circular dichroism spectroscopy will be used extensively to characterise the chiral gels and assess enantioselective drug release. |
| **\*Supervisor(s)** | Prof. Karl Malcolm – School of PharmacyDr Panagiotis Manesiotis – School of Chemistry and Chemical Engineering |
| **\*Eligibility / residence Status** | International applicants; self-funding applicants  |
| **Country** | Worldwide |
| **\*Start date and duration**  | September 2022 – three years |
| **\*Faculty** | Medicine Health and Life Sciences / Engineering and Physical Sciences  |
| **\*Research centre / School** | School of Pharmacy / School of Chemistry and Chemical Engineering |
| **Subject area** | Drug Delivery, Materials Science, Analytical Chemistry |
| **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. 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 March 2022 |
| **\*How to apply / contacts** | All postgraduate research applicants who are interested in the project must submit an application all required supporting documents via the Direct Applications Portal (link below).Any interested applicants can informally contact Prof. K. Malcolm or Dr P. Manesiotis by email.<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/><https://www.qub.ac.uk/schools/SchoolofChemistryandChemicalEngineering/Study>/PostgraduateResearch/PhDOpportunities/https://www.qub.ac.uk/schools/SchoolofPharmacy/Research/find-a-phd-supervisor/professor-karl-malcolm.html<http://go.qub.ac.uk/Manesiotis> |
| **Keywords for search filters** | Drug delivery, materials science, analytical chemistry, polymers, solid state NMR |
| **Training provided through the research project** | The successful applicants will join a multi-disciplinary team working across the Schools of Pharmacy and Chemistry and Chemical Engineering and will receive hands on training on design, development and characterisation of polymer materials for drug delivery and chiral separations. Example techniques include HPLC/HPLC-MS, GC/GC-MS, surface area analysis, FT-IR, UV and fluorescence spectroscopies, as well as solution and solid-state NMR. The student will also have opportunities to develop teamwork and interpersonal skills, literature review and writing skills, as well as presentation skills, both within the research group or University activities, as well as in major international conferences.  |
| **Expected impact activities** | The student will be expected to participate in School outreach events to promote the impact of their own research, as well as wider public facing science events. |