

Project proposal template – Faculty studentships Summer 2014

<i>Project title</i>	Development of Smart Nanocapsules for Targeted Anti-Cancer Drug Delivery	<i>Director of Study</i>	Gianpiero Calabrese
<i>Second Supervisor</i>	Peter Foot	<i>School</i>	Pharmacy and Chem ▾
<i>Other members of supervisory team</i>		<i>Any requirements from applicant (eg degree in specific subject area)</i>	Master degree in pharmacy, chemistry or pharmaceutical ▲ ☰ ▾
Project summary (max 1,000 characters)			
<p>Cancer is a significant cause of global mortality. Nanotechnology holds great promises for cancer treatment, but still presents challenges regarding toxicity and preferential targeting of tumour cells. This PhD project will be an investigation of the formulation and preliminary evaluation of core-shell polymer nanoparticles presenting ideal features for targeting cancer cells due to local redox/pH change triggering.</p> <p>We shall optimise and develop a novel method to synthesise hybrid polypyrrole-chitosan nanocapsules by the use and removal of an inorganic core template, which was recently piloted within our research group.</p> <p>Physico-chemical characterisation will be carried out using spectroscopic and optical techniques. Their ability to perform in terms of encapsulation, selectivity and therapeutic efficiency will be also investigated. Functionality of model drug-loaded nanocapsules will be demonstrated with release profile studies at varying pH and <i>in vitro</i> tests with cancer cell lines.</p>			