

Project Title	Drugs on Demand - towards an automated synthesis platform
Supervisor	Dr Christopher Rowlands
Theme(s)	Medical Devices
Project Type	Lab based
Project Description	<p>Modern drug synthesis occurs in large chemical plants, or at the very least on a lab bench, and requires extremely well-trained researchers, lots of glassware or plant components, and great expense.</p> <p>This project tries to do away with all of those limitations, allowing essentially any synthesis to be performed on a reconfigurable microfluidic chip. Microfluidics has great promise, particularly for small-scale syntheses, in that it can perform reactions more rapidly, under more tightly controlled and uniform conditions, and in an entirely automated manner. Unfortunately, chip designs for one reaction cannot be easily modified or used for another reaction, which limits flexibility. This new microfluidic chip will be able to emulate any other design, changing reaction conditions and configuration rapidly and easily, ushering in a new era of microfluidic drug synthesis.</p> <p>The student on this project will be working with a postdoc to develop the new microfluidic chip. It uses tiny an array of tiny wax motor valves, so first the student will be responsible for designing and characterizing these valves, before scaling up to larger arrays.</p> <p>The ideal student will have some experience in CAD modelling, design of simple electrical circuits, and basic programming, but these are by no means essential - all candidates will be considered, and any required skills can be taught.</p>