

Project Title	AstroTIRF: Pinning light to a surface
Supervisor	Dr Christopher Rowlands
Theme(s)	Biomedical Sensing Diagnostics and Imaging Medical Devices
Project Type	Lab based
Project Description	<p>Total Internal Reflection Fluorescence Microscopy is an imaging technique that can take pictures of cells with incredible resolution - it is able to see things that are the thickness of a virus. While this is very important for imaging of complex cell processes, the limitation is that we can only see the surface of the cell - we can't see inside, as we can with a normal microscope. Nevertheless, it might be possible to interfere two illumination patterns together and combine the high resolution of TIRF with the ability to see features hidden inside the cell. The student on this project will be responsible for delivering on this vision.</p> <p>The student will start this project by modelling the system using optical wave propagation software, before moving on to optics experiments in the lab. Initially work will be on a test system, but eventually will be incorporated into a microscope and used to image cells.</p> <p>The ideal student for this project would have a good background in programming, and some experience with building precise mechanical devices, but the student could be taught anything they need to know.</p>