



Position Title	PhD Studentship - Evaluation of Additive Manufacturing as a Novel Fabrication Route for High-performance Electron Microscopy
Project Abstract	<p>Many disciplines are undergoing a design and fabrication revolution with the advent of additive manufacturing or AM (3d printing). This is causing much old wisdom to be re-evaluated. The aims of this project will be to asses how these new capabilities might affect the design and construction of atomic-resolution transmission electron microscopes and their associated accessories. Two inter-related areas will be explored in this regard; electron-lenses and sample-holders. Electron-lenses are at present made from simple geometries, usually machined on lathes allowing only limited cylindrical symmetry designs. These designs often then contain sharp corners, leading to regions of magnetic-field saturation, spillout, or concentrated mechanical stresses. Sample holders are again manufactured at present by (mostly) CNC machining. Prices for these holders range from \$10k-400k depending on the complexity of manufacture.</p> <p>Part of the project will involve working with CAD drawing packages to replicate the existing state-of-the-art designs, analysing these both mechanically using FEA tools as well as magnetic field simulations, and hopefully identifying opportunities to exploit new manufacturing capabilities in their manufacture for improved performance.</p> <p>3D printing facilities will be available to produce prototypes of any new designs proposed and, depending on the success of these, metal parts will be manufactured for testing.</p>
Experience	The PhD position is funded for 4 years, including a monthly stipend and materials and travel budget. Applicants should hold a minimum of an honours bachelor's degree at 2:1 level or equivalent in a relevant subject such as Physics/Chemistry/Nanoscience. Candidates should also have a strong interest in Additive Manufacturing/Microscopy.
Funding	The studentship will cover fees up to €5,500 pa and a stipend of €18,500 pa
Location	TCD
Closing Date	Friday 29 th June 2018
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