

## Royal Society-Wolfson Research Merit Award for Andrea Ferrari

Posted on Tuesday 25 May by [Jane Moorman](#)

The Royal Society, the UK's national academy of science, has recognised the work of Dr Andrea Ferrari at the Department of Engineering with one of the prestigious Royal Society Wolfson Research Merit Awards. The award is given to individuals of proven outstanding ability to undertake independent, original research.

Andrea outlines his research as follows. Fundamental science plays a crucial role in underpinning and generating future technologies. The ability to manipulate the structure and composition at the nanoscale opens new horizons and opportunities to create novel materials with superior performance. The introduction of new, low-cost materials, encompassing polymers, advanced liquid crystals, and nanostructures, will have a disruptive impact on a variety of devices based on conventional inorganic semiconductors, not only because of cost/performance, but also because they can be manufactured in more flexible ways, suitable for a growing range of applications.

Carbon is one of the most versatile elements in the periodic table, forming allotropes with diverse properties. Rolled-up individual graphite sheets (graphene) may form hollow cylinders known as carbon nanotubes. They exhibit promising electrical, optical, thermal and mechanical properties. Graphene also has remarkable electronic and optical properties that qualify it for applications in future optoelectronic devices, including solar cells. Semiconductor nanowires are a class of low dimensional objects in which carrier motion is restricted in one direction. Due to quantum confinement, they have discrete energy spectra that are strongly size dependent.

Andrea's research group aims to overcome some of the challenges for utilization of graphene, nanotubes and nanowires for large area optoelectronics, and produce a variety of devices ranging from ultrafast lasers, broadband photodetectors, solar cells, touch screens, smart windows and displays, exploiting the unique properties of these nanomaterials.

(Article taken from Engineering Department website)

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