



## Low-cost, flexible touchscreens

► Inexpensive nanostructured touchscreen electrodes

Academic: *Dr Alan Dalton*

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An IAA project suggests that graphene-treated nanowires could soon replace current touchscreen technology, allowing for more affordable, flexible displays and significantly reduced production costs.



The majority of today's touchscreen devices, such as smartphones and tablets, are made using indium tin oxide (ITO) – a material also used in solar cells, EL (electroluminescence) lighting and a variety of other optical and electronic applications. However, ITO is in short supply and expensive, currently costing over \$30 per square metre.

Work at Surrey, conducted in collaboration with touchscreen manufacturer M-SOLV, has demonstrated that graphene-treated nanowires can be used to produce flexible touchscreens at a fraction of the current cost.

The Surrey team developed a unique process for creating hybrid electrodes – the building blocks of touchscreen technology – using films of silver nanowires and graphene/carbon nanotubes. The process is relatively simple, environmentally friendly and scalable, representing significant cost savings over current technology. The graphene-based solution costs around \$5 per square metre to produce.

Having demonstrated that the process is scalable, the project team then developed laser patterning methods to pattern the hybrid films for touchscreen applications using M-SOLV patented technology.

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Dr Dalton says:

**“The growing market in devices such as wearable technology and bendable smart displays poses a challenge to manufacturers. At the moment, this market is severely limited to materials which are both very expensive to make and designed for rigid, flat devices.”**

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