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First graphene display paves way for flexible electronics

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Flexible and fully functioning graphene displays are here, as is evidenced by a prototype created jointly by the Cambridge Graphene Centre and Plastic Logic (<http://www.cam.ac.uk/research/news/first-graphene-based-flexible-display-produced>). It is the first time that the wonder material graphene has been incorporated in a transistor-based device.

Graphene (<http://www.wired.co.uk/tags/Graphene>)

is one of the strongest, lightest and most flexible materials known to man, and while it is extremely expensive to develop and work with at the moment, in the future we will start to see it integrated into more and more of our electronics.

Cambridg

The prototype that has been created is similar to the screens found on ebook readers, although it is made using flexible plastic instead of glass. The pixel electronics that make up the backplane include a graphene electrode.

The benefit of graphene displays is that due to their flexibility they could be used to create completely foldable electronics. As it can also be processed from a solution, it offers inherent manufacturing benefits -- more efficient printing, for example.

For the prototype, researchers combined the graphene-imbued backplane with electrophoretic imaging film so as to create an ultra-low power and very durable display. In the future this could be swapped for liquid crystal or organic light-emitting diodes to create the LCD and OLED screens we're familiar with from our mobile devices and televisions.

Cambridge Graphene Centre isn't the only place in the UK where the potential of graphene is being experimented with. The National Graphene Institute is currently being built at Manchester University, and beyond our shores Samsung is conducting its own studies (<http://www.wired.co.uk/news/archive/2014-04/04/samsung-graphene-breakthrough>) on the material in the hope of using it in wearables and other next-generation devices.

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The potential use cases for graphene are endless. It has already been used to develop the world's smallest FM radio transmitter (<http://www.wired.co.uk/news/archive/2013-11/21/graphene-fm-transmitters>) and Manchester University researchers have received funding from the Bill and Melinda Gates Foundation to try and develop graphene condoms (<http://www.wired.co.uk/news/archive/2013-11/22/graphene-condoms>).



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"The potential of graphene is well known, but industrial process engineering is now required to transition graphene from laboratories to industry," said Indro Mukerjee, CEO of Plastic Logic. The company, along with the Cambridge Graphene Centre, has received a grant from the UK Technology Strategy Board, so that the partners can try and meet their target of creating a full-colour, OLED display using graphene within the next year.

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