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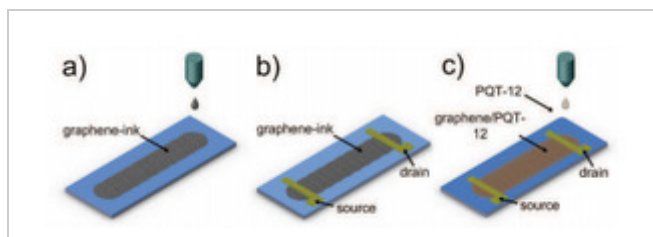
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We demonstrate ink-jet printing as a viable method for large area fabrication of graphene devices. We produce a graphene-based ink by liquid phase exfoliation of graphite in N-Methylpyrrolidone. We use it to print thin-film transistors, with mobilities up to about $95\text{cm}^2/\text{V-s}$, as well as transparent and conductive patterns, with about 80 % transmittance and about $30\text{k}\Omega/\text{sq}$ sheet resistance. This paves the way to all-printed, flexible and transparent graphene devices on arbitrary substrates



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Technology Review - These guys have found a way to replace or augment the conducting polymers in these inks with graphene, the wonder-material of the

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moment. They've found a way to readily produced graphene by chemically chipping flakes off a block of graphite and filtering them to remove any that might clog the printer heads. They then add the flakes to a solvent called N-Methylpyrrolidone, or NMP, which minimises problems such as the coffee ring effect that can occur when some solvents evaporate. Finally they've put this stuff in their printers and printed out a few circuits and thin film transisters.

The results are promising. The graphene-based inks match or beat the performance of most other inks available today. That's pretty good for a first attempt since improvements will certainly follow.

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was also combined with PQT-12 to fabricate devices with mobility of about $0.2\text{cm}^2/\text{V-s}$ and ON/OFF ratios $\sim 4 \times 10^5$. This demonstrates the viability of graphene-inks for flexible and transparent electronics.

We demonstrated ink-jet printing of graphene. Liquid phase exfoliated graphene is an ideal and low cost material for the fabrication of transparent conductive inks. Our graphene-ink was used to print TFTs with mobility of up to about

$95\text{cm}^2/\text{V-s}$. It

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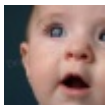
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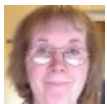
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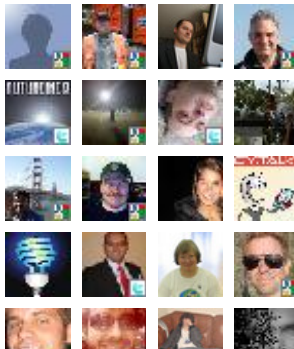
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