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Inkjet printers bang out graphene circuits

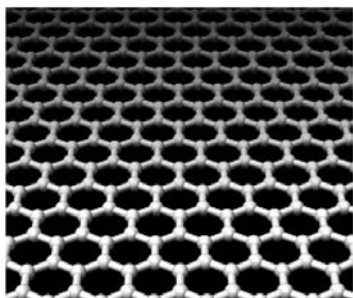
Already talking to industry partners, the Prof tells TechEye

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Another application of that wonder material graphene has emerged, adding to its growing list of strange and exciting potential uses, with a breakthrough in printed circuits.

According to work by Cambridge University, the possibilities of using graphene in printed circuits has received a significant boost with a new production method.

Printed circuits are nothing new, but the main problem that has held back cheaply produced thin film electronics, leading to flexible and transparent electronics, is that the processing power is far too slow.

This usually involves mixing in conducting polymers with inks that can be printed right onto substrates. Compared to traditional chips they are miles behind producing computational speeds that consumers have grown accustomed to.

However, advances made by graphene expert Andrea Ferrari and colleagues at Cambridge have shown that the revolutionary properties of graphene could mean that printed circuitry could soon be viable. Among the multitude of graphene applications currently researched in labs around the world, its use in next generation chips is strongly touted as it has the potential for extremely high speed processing.

The problem up until now is that it is difficult to get graphene to incorporate with droplets needed to function with an inkjet printer.

The results of the study, published on [Arxiv](#), shows a method involving chipping flakes of graphene from a block of graphite with a chemical process, and filtering out any printer clogging bits.

Apparently the team has been able to knock out a number of circuits for thin film transistors, according to [Technology Review](#), but the research appears to be in its infancy.

According to the team, the discovery will pave the way for "all-printed, flexible and transparent graphene devices on arbitrary substrates .

TechEye spoke to Professor Andrea Ferrari, who told us that the developments with inkjet printing could lead to flexible and transparent electronics, smart textiles, games, toys and RF tags.

According to Ferrari, even though he and the team have just completed early stage research, the technology is already looking promising: "This is a first demonstration, but already at this stage, at the first attempt, our mobility is much bigger than the biggest reported to date for printed semiconductor electronics.

"This is just the beginning. We are in contact with potential industrial partners and we hope to have some prototypes ready in the near future."

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