

Qüestions de Vida Cristiana, Studia Monastica, Catalan Review Y Caplletra.

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WHATISGRAPHENE AND HOW IT WILL CHANGE OUR LIFE

We live in an amazing time of change.

Every day there are new and new technologies. One of these discoveries is graphene. I believe that graphene will change almost all areas of our life, but today I want to tell you about what it is and what impact it will have on the IT industry.

Graphene is an allotrope form of carbon consisting of a single layer of carbon atoms arranged in a hexagonal lattice. It is a semimetal with small overlap between the valence and the conduction bands. It is the basic structural element of many other allotropes of carbon, such as graphite, carbon nanotubes and fullerenes.

It's strong, it's flexible, and it's now been here for a while. It spent a long time being refined and developed in the labs, but graphene has been on the market for a couple of years now... and it's having an impact.

The first wave of graphene-based products are being used in the world of smartphones, wearables, batteries, virtual reality, sports equipment, super-capacitors and supercars... and that's just the beginning.

Graphene was found by Konstantin Novoselov and Andrei Geim, working at the University of Manchester, for which Russian scientists were awarded the Nobel Prize. To date, about ten billion dollars have been allocated to the study of graphene properties for ten years, and it is rumored that it can be an excellent substitute for silicon, especially in the semiconductor industry. And now I will give you some tips that proves sense of graphene in IT industry:

Graphene nano-electronics. Ultra-thin and 2D, graphene conducts electrical current like nothing else, which in theory should mean much faster and more energy-efficient forms of electronics. What has been holding it back is the band-gap problem; how to engineer a graphene transistor that reliably switches on and off.

Researchers at DTU Physics in Denmark have come up with a new nanolithography-powered 'sandwich' technique that gets graphene to nanoscale dimensions without ruining its electrical properties.

"The fact that we can tailor electronic properties of graphene is a big step towards creating new electronics with extremely small dimensions," says researcher Peter Bøggild.

Graphene 'supercaps' for phones. Since graphene conducts electricity so perfectly, it can be used to create ultrafast charging batteries that can handle currents at rates that are dozens of times higher than lithium batteries.

Supercapacitors or 'supercaps' are storage devices that can charge and discharge at a very high speed, and the addition of graphene has been worked on for five years by aerospace giant Thales and M-SOLV.

A new spray coating technique has allowed researchers to increase the power of supercapacitors by five times. Expect products to be launched in late 2019.

Graphene brain-computer interfaces. Graphene's flexibility means it can be used in brain implants that record and stimulate brain signals on the surface of the brain. "Graphene is enabling a new generation of less-invasive neural implants," says Professor Dr. Jose A Garrido, ICREA Research Professor at ICN2.

"It can be easily integrated into flexible substrates, it has a very high signal-to-noise ratio so retains a very high quality electrical signal, and it also minimizes the use of cables."

Garrido's work at the ICN2 Speech Centre Stimulation and Brain-Com is focusing on providing a communication path to patients with severe speech disabilities (such as strokes and motor neuron disease) by mapping the region of the brain correlated to pronouncing speech.

Graphene scanners for smartphones. Graphene can also be used to make super-thin, super-sensitive image sensors that can detect invisible infra-red light. Cue spectral applications to differentiate between different organic materials, with a quick photo revealing exactly how ripe fruit is, or whether baby milk is toxin-free; all from a smartphone.

“Our prototype is built on graphene and CMOS integration that can sense both visible and infra-red light,” says Goossens at the ICFO. “In the near future we can produce them in very high quantity at very low cost for smartphones.”

Graphene sensors for 3D cameras. If you've read up on graphene, you may have heard optimistic reports of a graphene camera that's 1000x more sensitive to light than the ones we have today, conjuring visions of pixel-perfect night shots. While you won't want to get your hopes up for that just yet, a more recent project from the University of Michigan deserves a closer look.

It's a DSLR-size camera that uses multiple translucent graphene sensors to create a 3D map of a scene, so that you can pick your focus point after taking a shot. This is a graphene alternative to the 'light field' Lytro Illum, but where the graphene camera uses multiple sensor layers, the Illum needs an array of hundreds of thousands of micro lenses to create its images.

"Graphene detectors can offer very high sensitivity, so you don't really sacrifice the clarity by making them transparent," says associate professor of electrical engineering and computer science Zhaohui Zhong. The tech could be slimmed down to fit into a phone.

3D-printed graphene drones. Drones run out of battery quickly, and their propellers break when they're landed badly. Cue a drone with 3D-printed graphene composites in its propellers that's both super-strong and super-light, so more battery-efficient.

“Printing with graphene is very easy, but when you start combining it with other polymers and materials, that's when it gets complicated,” says Charlotte Powell at the University of Manchester's National Graphene Institute.

Nevertheless, the goal of this project with the University of Central Lancashire is to make all parts of the drone with graphene, including more graphene composites in the body and even a graphene-based battery pack and graphene spectral sensors.

Flexible graphene Wi-Fi receivers. Hardware is dead; the future of phones is flex-ware – and that means graphene making everything curved, bendable and flexible. Oh, and the data super-fast, too.

The first Wi-Fi receiver based on graphene, from AMO together with RWTH Aachen University, has 24 Wi-Fi receivers on pieces of plastic and glass, but its makers claim it can work on fabric, paper, glass or plastic, and deal in Bluetooth, 4G and even 5G.

Prototypes are working at 2.45Ghz and 5.8Ghz and the creators have circuits that work at up to 90Ghz, which covers the 5G standard.

In addition, with help of graphene scientist create: graphene miniature speakers, graphene cooling in the Huawei Mate 20 X, Robotic graphene hands, graphene cryo-cooler compressor for 5G, graphene infection-detectors, graphene earphones, robotic graphene hands, graphene contactless cards, a battery that charges in minutes and many other modern useful things.

In conclusion, I want to say once again that we live in an amazing time of discovery: people conquer space, take care of nature, and conquer disease. And I am sure that such “magic” material as graphene will help a lot with this. Thanks for attention.

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SYMBOLE IN DER INTERKULTURELLE KOMMUNIKATION

Symbole und Farben in der interkulturellen Kommunikation

Symbole finden wir in allen Kulturen. Sie sind verkürzte Botschaften in Form von Zeichen, Farben, Zahlen, Pflanzen, Tieren und anderem. Sie enthalten Bedeutungen, die verbal einer längeren Erklärung bedürfen. Ein besonders sensibler Bereich sind die religiösen Symbole. Religiöse Bedeutung kann auch eine Farbe haben, wie die Farbe „Grün“ im Islam. In den letzten Jahrzehnten haben Wirtschaftsunternehmen wiederholt die Erfahrung gemacht, dass in der Werbung eingesetzte Symbole zu interkulturellen Konflikten führten, die bis zum Abbruch der Geschäftsbeziehungen brachten. Folgendermaßen kannman das Beispiel eines grünen Produktes eines internationalen Unternehmens anführen, das in Malaysia vom Markt genommen werden musste, weil dort die Farbe „grün“ negativ besetzt ist und Krankheit assoziiert. In der interkulturellen Begegnung können Symbole der Farben und Zahlen wichtig sein. Die Farbsymbolik in den verschiedenen Ländern und Regionen bezieht sich häufig auf den umgeben-