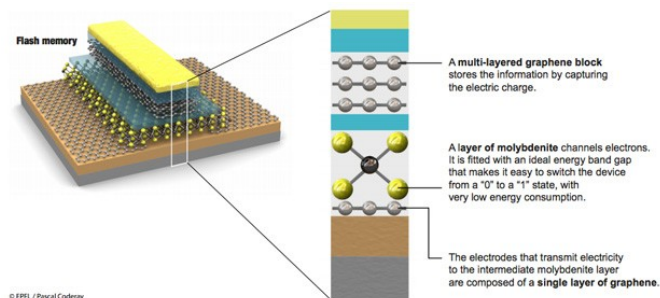


Graphene + Molybdenite = Better Flash?

Written by Marco Attard
21 March 2013

Scientists at EPFL believe the future of flash memory makes use of a pair of materials-- graphene and molybdenite, two materials already used in promising component prototypes.



The Laboratory of Nanometer Electronics and Structures (LANES) discovered the electronic properties of molybdenite (MoS₂) back in 2011. Similar in structure to graphene (being a "2-dimensional" material), molybdenite has interesting semi-conducting properties allowing it to switch very easily between "on" and "off" states (like those write commands use) without using a lot of energy.

On the other hand graphene is a superior electrical conductor than silicon, and is often touted as the wonder material for transistors of the future.

The LANES proposal combines both materials in sandwich-style "field effect" geometry-- a molybdenite layer receives electrons from a bottom layer of graphene electrodes, while on top multiple graphene layers capture electric charge and store memory.

"Combining these two materials enabled us to make great progress in miniaturization, and also using these transistors we can make flexible nanoelectronic devices," LANES director Andraas Kis explains.

In theory, the technology is more than suitable for increasingly small and flexible electronics and devices. However the technology will only hit the market in far future, meaning we have to depend on silicon for a while yet.

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