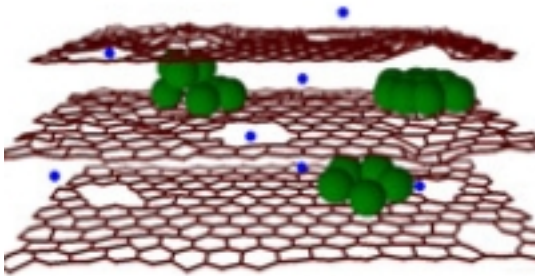


Ten Times the Capacity from Li Ion Batteries?

Written by Marco Attard
16 November 2011

Researchers at the Northwestern University claim they managed to increase both charging capacity and speed of lithium ion batteries by 10x-- potentially pointing to the future of mobile power.



Li ion batteries are not only found in most mobile devices-- from mobile phones to laptops-- but also in electric cars and even "exoskeleton" robots.

Current Li ion batteries create charge by moving lithium from one end of the battery to the other (from anode to cathode), and recharge through the sending of ions from electrolyte to the anode. Inside the batteries are layers of carbon-based graphene sheets, in which lithium ions are "packed."

The new process involves making millions of tiny holes in the graphene sheets (each 10-20nm in size), creating a "shortcut" for ion movement. In addition, the team also sandwiches small silicon clusters between each graphene layer, allowing the increase of lithium ion density-- whereas x6 carbon atoms can accommodate 1 lithium ion, 1 silicon accommodates x4 lithium ions.

The researchers say charging capacity and speed does fall sharply after 150 test charges, but "after 150 charges, which would be one year or more of operation, the battery is still five times more effective than lithium-ion batteries on the market today." They believe the technology can become commercially viable within 3 - 5 years, following work on an electrolyte system shutting down the battery automatically at high temperatures.

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