Flower-shaped nanoparticles may lead to better batteries for portable electronics

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Want more power and longer battery life for that cell phone, laptop, and digital music player? "Flower power" may be the solution. Chemists are reporting development of flower-shaped nanoparticles with superior electronic performance than conventional battery materials. These "nanoflowers" may power next-generation electronic devices, say the scientists in a report scheduled for the Oct. 8 issue of ACS' *Nano Letters*.

Gaoping Cao and colleagues point out that nanoflowers are not new. Researchers have developed various types of flower-shaped nanoparticles using different materials, including manganese oxide, the key metallic ingredient that powers conventional batteries.

However, older-generation nanoflowers were not suitable for electronic products of the future, which will demand more power and longer battery life, the researchers say.

In the new study, scientists first grew clusters of carbon nanotubes, strands of pure carbon 50,000 times thinner than a human hair, that are known to have superior electrical conductivity. The scientists then deposited manganese oxide onto the nanotubes using a simple, low-cost coating technique called "electrodeposition," resulting in nano-sized clusters that resemble tiny dandelions under an electron microscope.

The result was a battery system with higher energy storage capacity, longer life, and greater efficiency than conventional battery materials, the researchers say.

Citation: "Growth of Manganese Oxide Nanoflowers on Vertically-Aligned Carbon Nanotube Arrays for High-Rate Electrochemical Capacitive Energy Storage"; dx.doi.org/10.1021/nl800925j

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