

## **High Power Supercapacitors From Carbon Nanotubes**

February 15 2005

Supercapacitors that can deliver a strong surge of electrical power could be manufactured from <u>carbon nanotubes</u> using a technique developed by researchers at UC Davis.

Supercapacitors are electrical storage devices that can deliver a huge amount of energy in a short time. Hybrid-electric and fuel-cell powered vehicles need such a surge of energy to start, more than can be provided by regular batteries. Supercapacitors are also needed in a wide range of electronic and engineering applications, wherever a large, rapid pulse of energy is required.

Ning Pan, a professor of textiles in the Department of Biological and Agricultural Engineering and the Nanomaterials in the Environment, Agriculture and Technology (NEAT) center at UC Davis, postdoctoral researcher Chunsheng Du and Jeff Yeh of Mytitek Inc. of Davis prepared suspensions of carbon nanotubes -- tiny rolled-up cylinders of carbon just a few atoms across. They developed a method to deposit the nanotubes on nickel foil so that the nanotubes were aligned and packed closely together.

Conventional, or "Faraday" capacitors, store electrical charges between a series of interleaved conducting plates. Because of their small size, the nanotubes provide a huge surface area on which to store and release energy, Pan said.

The new devices can produce a power density of 30 kilowatts per kilogram (kW/kg), compared with 4 kW/kg for the most advanced



devices currently available commercially, Pan said. Other researchers have described laboratory supercapacitors capable of up to 20 kW/kg, he said.

The work is published in the Feb. 1 issue of the journal Nanotechnology.

Source: University of California - Davis

Citation: High Power Supercapacitors From Carbon Nanotubes (2005, February 15) retrieved 5 May 2024 from <u>https://phys.org/news/2005-02-high-power-supercapacitors-carbon-nanotubes.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.