



TECHNOLOGY

high-powered Electrochemical Energy Storage Devices

OVERVIEW

Recently, coaxial nanowires have attracted attention due to their added synergic properties (e.g. high conductivity) or functionalities (e.g. core/shell p-n junction) arising from the combination of different materials. However, till date, a step-wise synthetic approach has been taken for manufacturing these coaxial nanowires, i.e., metal oxide nanoparticles or nanostrands are first synthesized and subsequently coated chemically by conductive polymers as shells.

Researchers at the University of Maryland have come up with a novel one step method of fabricating coaxial nanowires that can serve as excellent electrochemical energy storage materials. The core of these coaxial nanowires includes Manganese Oxide (MnO₂) and the shell is made of a highly conductive, porous & flexible polymer. This novel technology has several advantages of which the most prominent are:

- 1) The coaxial nanowires have very high specific capacitances at high current densities. For example, the coaxial nanowires fabricated using this novel technique, preserved 85% of their specific capacitance (210 to 185 F/g) as the current density increased from 5 to 25 mA/cm².
- 2) The structure of the coaxial nanowires, i.e., the thickness of the shell and the length of the nanowire can be easily controlled, thereby providing the ability to tune the electrochemical properties of the coaxial nanowires.

The above novel technology can immensely improve the performance of high power batteries & supercapacitors.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Nanotechnology + Nanoparticles + Nanomaterials
- Power Electronics

- Chemical

EXTERNAL RESOURCES

- [US Patent 8,535,830](#)

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