Review of: "Nano Fullerenes with The Ability to Store Electrostatic Energy That can be Used as Nano Supercapacitors With Very High Capacity"

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Potential competing interests: No potential competing interests to declare.

> ***Note: Nano fullerenes with the ability to store electrostatic energy that can be used as nano supercapacitors with very high capacity. Also, with these nanotubes, the nervous network can be repaired. Carbon nano fullerenes are allotropes of carbon such as diamond and graphite. These compounds are made of carbon and take on spherical and elliptical shapes. Those that are spherical are called buckyballs.***

Fullerenes do not have much chemical activity. The width of the graphite plate is about a few nanometers. The length of the nanotubes ranges from a few micrometers to less than a meter. Their unique molecular structure creates unusual macroscopic properties.

Non-carbon nano fullerenes

In non-carbon fullerenes, other elements create a structure similar to fullerenes, the chemical structure of these fullerenes is often metal oxide, vanadium oxide is one of them.

Intrahedral fullerenes

They enclose different atoms inside themselves, the obtained nanostructures are used for applications such as tracking elements and biological processes.

Multilayer fullerenes

Multilayer fullerenes consist of several fullerenes that are inside each other. For this reason, this structure is also called nano onion.

> ***The power of the nano-cavity in the nano supercapacitors is as if there are arrays of capacitors built inside the nano-cavities. There is a scanning electron micrograph, which is covered with an image that shows their design. Pores are etched in an aluminum substrate (nanoelectrode). Capacitors consist of two thin metal layers (nanoelectrolyte) separated by a layer of insulating material (additional nanoelectrode).***

Nano supercapacitor can store 100 times more energy than previous devices of its kind. Finally, such devices can store waves of energy from renewable sources such as wind and deliver that energy to the power grid when needed. In general, nanoelectric supercapacitors can store large amounts of energy, but they tend to charge slowly and wear out quickly. Meanwhile, capacitors have a longer life and can be discharged quickly, but store much less total energy. In order to make nano supercapacitors, nanostructured arrays of electrostatic capacitors can be created.Electrostatic nanocapacitors are the simplest type of electronic energy storage device. They store electrical charge on the surface of two metal electrodes separated by an insulating material. The electrical storage capacity of the nano supercapacitor is directly proportional to the surface area of these sandwich-like electrodes. The storage capacity of nano super capacitor can be increased by using nano structure to increase the level of energy storage. Nanoelectric supercapacitor electrodes work like the electrodes in regular capacitors, but instead of being flat, they are tubular and packed deep into nanocavities.The process of making a nano supercapacitor begins with a glass plate covered with aluminum. Pores are etched into the plate using acid and applying voltage. By carefully controlling the reaction conditions, highly ordered arrays of tiny but deep pores, each 50 nm in diameter and 30 μm deep, can be made. This process is similar to the process used to make memory chips. To make a nano supercapacitor , a very thin layer of metal, then a thin layer of insulation, then another thin layer of metal is placed in these pores. These three layers act as the nano electrodes of the electric capacitor and the insulating layer. A layer of aluminum is placed on top of the device and acts as an electrical contact. Another contact is made with an underlying aluminum layer.

> *The power of nano-cavity in nano supercapacitors is like arrays of capacitors built inside nano-cavities. There is a scanning electron micrograph, which is overlaid with an image that shows their design. Pores are etched in an aluminum substrate (nanoelectrode). Capacitors consist of two thin metal layers (nanoelectrolyte) separated by a layer of insulating material (additional nanoelectrode).*

Fullerenes are sensitive to light and their electrical properties change drastically with the change of wavelength of light. Such as: organic light-emitting diodes with long life and high performance, and fullerene molecules can be filled by other elements. For example, by placing some metal elements inside fullerenes, their electrical properties can be improved. Also, fluorine molecule can be used for storage in nano supercapacitors and confinement of non-carbon atoms .Nanosupercapacitors, also called electrochemical supercapacitors or nanocapacitors, thus emerge as promising fuel sources with astonishingly fast charge release rates. Amazing fast charging. Created to improve power execution (high speed capability), they still rely on the same inherent breakpoints. Nanosupercapacitors , also called supercapacitors or electrochemical capacitors, thus emerge as promising fuel sources with astonishingly fast charge release rates. Lithium particle batteries have been developed to improve power performance (high speed capability), they still rely on the same inherent cutoff points. Nano supercapacitors, also called supercapacitors or electrochemical capacitors, thus emerge as promising fuel sources with astonishingly fast charge release rates. Unlike dielectric capacitors that store energy as isolated electric charge.Nano supercapacitors store energy electrostatically by polarizing an electrolyte

solution. When a voltage is applied to the positive and negative cathodes of a supercapacitor, the particles in the electrolyte are drawn to the oppositely charged anodes. Reverse charges are separated at the interface between the strong surface of the terminal and the fluid electrolyte in the micropores of the cathodes, creating an exceptional "electrochemical double layer". Energy is thus discarded as charge partitioning between the double layer. Due to their unique properties, carbon nanotubes are a promising material for advanced nano supercapacitors. In particular, the use of nanotubes to make cathodes of nanosupercapacitors can increase the power thickness and performance of nanosupercapacitors compared to conventional dielectric capacitors. The authors describe various techniques for developing nano-supercapacitors using nanostructured materials and additionally chart the benefits of this imaginative form of energy storage. In conventional flat sheet dielectric capacitors, the capacitance of the capacitor inversely depends on the separation between the electrodes. Interestingly, the capacitance of a supercapacitor depends on the separation between the terminal charge and the countercharge in the electrolyte, which is much less than that of a dielectric capacitor. After that, super capacitors have a very large capacity. In total, the capacity of nano supercapacitors is several times that of standard dielectric capacitors.

> ***Conclusion :***
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> ***Carbon nanotubes are called stretched fullerenes. And graphene sheets are used to empower carbon nanotubes. Nano fullerenes with the ability to store electrostatic energy that can be used as nano supercapacitors with very high capacity.***

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