Hybrid Approaches For Enhanced Energy Storage Devices And Methods Of Making And Using There Of

Tech ID: 32647 / UC Case 2013-406-0

FULL DESCRIPTION

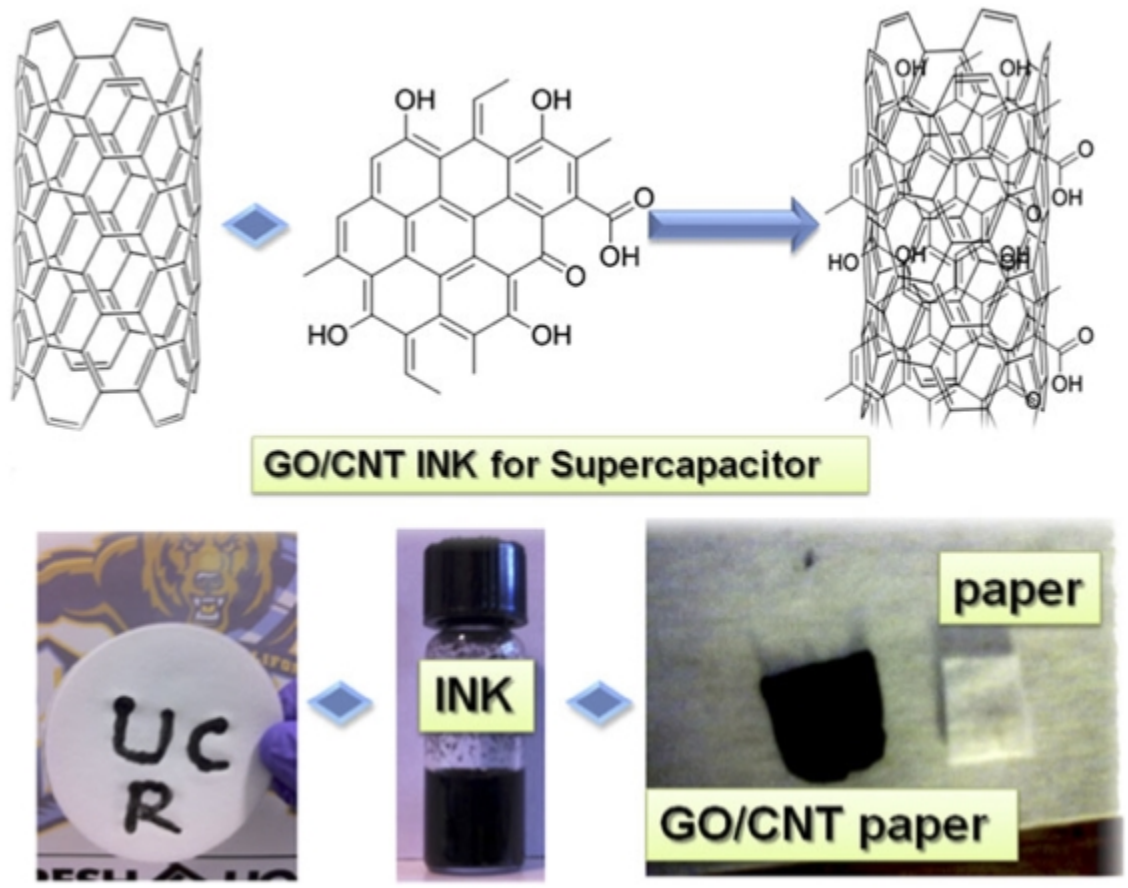
Background

Compared to batteries, supercapacitors offer high power density and longer cycle lifetime. Carbon nanotubes are an optimal option for supercapacitor applications because of their increased surface area, high conductivity and stability under electrochemical conditions. Paper based electrodes offer significant advantages such as:

- Low cost
- Light weight and higher flexibility
- Binder free process
- No need for an extra current collector

Current Invention

The research team led by Prof. Cengiz Ozkan have successfully developed a patented, Graphene Oxide (GO) and Single Walled Carbon Nanotube (SWCNT) composite ink for convenient fabrication of electrochemical supercapacitors.



Schematic of non-covalent interaction and preparation of supercapacitor electrodes with GO/SWCNT ink and paper.

ADVANTAGES

The novelty and benefits of their invention are:

- Low cost roll-to-roll fabrication method of double layer capacitors without the need for binders or additives.
- Convenient and scalable method.
- The composite ink is easily patterned and applied to paper.

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OTHER INFORMATION

KEYWORDS

Supercapacitors, Carbon Nanotube, Graphene Oxide, Energy storage, Low cost supercapacitor, Ultracapacitor

CATEGORIZED AS

- **Energy**
  - Other
  - Storage/Battery
- **Materials & Chemicals**
  - Nanomaterials
- **Nanotechnology**
  - Materials

RELATED CASES

2013-406-0

- High relative, high gravitational specific capacitance.
- Highly stable electrode material over long cycling.
- 85% capacitance retention after 60,000 charge-discharge cycles.

SUGGESTED USES

- Supercapacitors.
- Electrochemical energy storage

RELATED MATERIALS

- Assembled graphene oxide and single-walled carbon nanotube ink for stable supercapacitors

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,163,583	12/25/2018	2013-406

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