University of Central Florida

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An Environmentally Friendly Approach to Cost-Effectively Produce Oxidized Graphite and Prepare Carbon Fiber

Researchers at the University of Central Florida (UCF) have developed a scalable, environmentally friendly method to produce oxidized graphite. UCF's oxidized graphite is water dispersible, which aids in the preparation of thin films, carbon fibers, and carbon nanotubes; has resistivities ranging from 50-8,000 Ω/cm^2; and, most importantly, allows for easy conversion to graphene.

Background

Oxidized graphite is similar to graphite oxide, which has been traditionally used as a precursor for the large-scale synthesis of isolated layers of graphite known as graphene. Graphene has a number of applications including: composites, nanoelectronics, energy storage and drug-delivery systems. Most of these commercial applications require the production of graphite oxide on a large scale. Current methods, such as Hummers' method, for preparing this material require corrosive reagents and produce copious quantities of acidic waste. Additionally, Hummer's method graphite oxide can be contaminated with manganese salts which makes is pyrophoric.

Invention

Researchers at UCF have developed a solvent-free, low cost and scalable method for producing water dispersible, electrically conductive oxidized graphite. This material is chemically similar to graphite oxide, but retains the electrical conductivity of graphite. Using this oxidized graphite, UCF researchers have made advancements in the creation of thin films, carbon fibers, and carbon nanotubes.

UCF Inventor

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Tech Fields

Carbon Nanotubes, Nanotechnology

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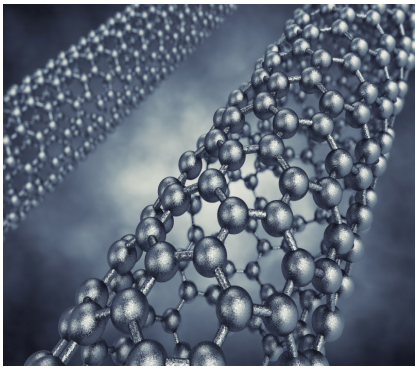

Benefits

- Cost-effective method for producing graphene, thin films, carbon fibers and nanotubes
- Environmentally-friendly, solvent-free production of oxidized graphite
- Tunable oxygen content
- Hydrophilic, freely dispersible in water
- Usable in applications where graphite oxide may be unsuitable due to the presence of manganese impurities

Applications

Ceramics, Semiconductors, Magnetic Field Detection, LCDs, Solar Cells, Batteries, Plastics (Polymers), Inks, Mold Releases, Drug Delivery Devices, Structural Composites, Electrically Conductive Fabrics, Sports Equipment, Machine Parts, Automotive Applications and Robotics

If you or your company are interested in this opportunity, Contact:

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