



Methods For Removing Polymer Coatings From Single-Walled Carbon Nanotubes

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WARF: P150061US01

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method to sort and purify semiconducting SWCNTs.

Overview

Single-walled carbon nanotubes (SWCNTs) have exceptional properties that make them useful in a variety of semiconducting applications such as field effect transistors (FETs), solar cells and gas sensors.

During fabrication, it is critical to separate the desired semiconducting SWCNTs (s-SWCNTs) from the undesired metallic SWCNTs (m-SWCNTs) found in the mixture. The most effective method is to selectively coat s-SWCNTs with a polymer wrap. However, removing the sticky coating post sorting remains a challenge.

The Invention

UW–Madison researchers have developed a new, mild method to remove the polymer coatings used to selectively wrap and sort s-SWCNTs from m-SWCNTs. The method is based on a process of detaching the coating by binding transition metal complexes to bi-pyridine repeat units in the polymer backbone.

Applications

- Field effect transistors, displays, flexible electronics, sensors, biosensors and heterojunction devices (e.g., solar cells)

Key Benefits

- Carried out under mild conditions
- Supports high electronic-type purity
- No undesired side effects
- Does not adversely impact electric/optoelectric properties

Stage of Development

This method has been successfully tested with a variety of SWCNTs.

Additional Information

For More Information About the Inventors

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- [Padma Gopalan](#)
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Related Technologies

- [WARF reference number P150242US01 describes the researchers' method to make high density s-SWCNT film with excellent nanotube alignment.](#)

Tech Fields

- [Semiconductors & Integrated Circuits : Components & materials](#)

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846

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