



TECHNOLOGY AVAILABLE FOR LICENSING

Large Scale Nanoelement Assembly Method for Making Nanotube Circuit Interconnects and Diodes

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Inventors: Evin Gultepe, Dattatri Nagesha, Srinivas Sridhar

Invention Details:

The invention describes a method for three-dimensional directed assembly of single-wall carbon nanotubes (SWNT) into porous alumina nanotemplates. The process is carried out at ambient temperatures. This technique will be useful for large-scale, rapid, three-dimensional assembly of SWNT for nanoscale semiconductor electronics applications.

Benefits of the Invention:

Advantages:

- Rapid, high-rate, large-scale assembly
- Scalable processes for industrial manufacturing
- No need for high temperatures during assembly
- Decreased exposure to acidic environments
- Solutions to leakage power consumption, variability
- Viable commercial scale-up
- Increased functional density and performance
- High processing power

Applications:

- Nanoelectronic materials, tools, and equipment
- Carbon nanotube electronics
- Field emission displays
 - High-definition television
 - Indoor/Outdoor signage
 - Automotive displays
- Sensors
- Memory devices
 - Logic gates, molecular quantum computing
- Medical devices
- MEMS/NEMS (i.e. for aerospace applications)

The Bottom Line:

Commercial interest in nanotubes is rapidly increasing. SWNTs are one of the most popular structures in nanoscale electronics. They have tremendous importance, particularly as interconnects, since current materials do not meet required resistivity for smaller diameters. The proposed method overcomes current limitations to allow for easily scalable high-rate manufacturing.

For More Information:

Please contact:

Anthony N. Pirri, Ph.D.
Director, OTIC
Northeastern University
360 Huntington Ave, 960 RP
Boston, MA 02115-5000
Phone: 617-373-8810
Fax: 617-373-8866
Email: a.pirri@neu.edu

or

Srinivas Sridhar, Ph.D.
Department of Physics
Northeastern University
360 Huntington Avenue, 111 DA
Boston, MA 02115-5000
Phone: 617-373-2930
Fax: 617-373-2943
Email: s.sridhar@neu.edu