



Large-Scale Carbon Nanotube Production

Product: Large-Scale Synthesis of Nanotubes

Development Stage: Pilot Scale

Primary Inventor:

Ahalapitiya H. Jayatissa, PhD,
Manufacturing Engineering
Department

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Contact: Clark Bennett Ph.D.,
dclark.bennett@wmich.edu
269-387-8218

energy and fuel storage capability, electron emission capability and many advantageous thermal, chemical and surface properties.

Possible applications using nanotubes;

- Flexible batteries on almost any irregular surface
- Efficient fuel cell storage
- Catalytic converter catalyst
- Scaffolds that improve healing of broken bones
- Sensitive sensors for chemical vapors and biomolecules
- IC Transistors with nanometer dimensions

Commercial applications have been hampered by difficulty in synthesis capacity, manipulation and structural control of carbon nanotubes.

Therefore, there is a need for a method and apparatus which enables the synthesis of uniform carbon nanotubes in a cost effective and easily controllable method.

Technology Description

Using the method developed by Dr. Jayatissa at Western

- Nanotubes with consistent size and structure
- Nanotubes incorporating metal ions

Michigan University, carbon nanotubes can be formed in a high-density, closely packed configuration enabling their large-scale production. The nanotubes are grown in a patented chemical vapor deposition chamber containing a coiled filament wrapped around a substrate with a catalytic coating that is supported inside the coiled filament. Air is evacuated from the chamber or replaced by an inert gas, the filament is heated and a bias voltage is applied between the filament and the substrate

When a cylindrical substrate is utilized, the carbon nanotubes grow perpendicular to the longitudinal axis of the cylindrical substrate, around the entire substrate. This radial growth of the carbon nanotubes allows for the formation of a densely packed configuration of the carbon nanotubes that are easily separated from the substrate without damaging their structures.

- Easy isolation of nanotubes

Carbon nanotubes have many desirable properties such as a high strength and low weight compared with volume,

Potential Benefits

- Large-scale production of nanotubes