CARBON NANOSTRUCTURES FROM PYROLYSIS OF ORGANIC MATERIALS

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Description

Many prior-art approaches have been developed for preparation of carbon nanostructures such as carbon vaporization in electric arcs and chemical vapor depositions. Most of them are associated with lab/batch scale production. Very few techniques are available for large scale production of such nanostructures. One of such techniques is combustion, involving burning of liquid or gaseous fuels under extremely stringent conditions. However, these techniques have many associated limitations such as high cost, stringent operation and potential health risk/danger with respect to storage and handling of such toxic/explosive fuels. **This novel procedure involves pyrolysis of harmless organic materials for preparation of efficient carbon nanostructures such as carbon nanotubes.**

Value Proposition

The process:

- Allows for an efficient conversion of solid organic fuels (especially solid wastes and biomass) into high value carbon nanostructures
- Allows for a generation of valuable process heat, using an efficient and an environmentally friendly pyrolysis and combustion process
- Allows for synthesis of a cost, resource, and energy efficient carbon nanotubes
- Involves preparation of a significant amount of commercially usable hydrogen (>8%)
- Would be commercially useful for the other following applications:
    - o Use as additives to achieve electrostatic dissipation
    - o Use as a battery material or composites
    - o Use in energy harvesting
    - o Use as a replacement or additive to carbon black in automotive tires
    - o Use in robotics, optical fiber switches, displays, and prosthetic devices

Intellectual Property Status

Pending United States National Application 13/260,397
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