A Technique To Make Carbon Nanotube Electrodes

Tech ID: 33710 / UC Case 2003-289-0

BRIEF DESCRIPTION

Researchers at UC Irvine have developed a novel system leveraging dielectrophoresis through nanoelectrodes for precise manipulation of nano-scale polarizable objects.

FULL DESCRIPTION

Dielectrophoresis (DEP) is a phenomenon in which a force is exerted on a particle (charged or neutral) when it is subjected to a non-uniform electric field. DEP can be used to manipulate small particles in solution down to the size of a single molecule but in practice it is difficult to generate electric fields strong enough to overcome random thermal motion.Researchers at UCI have developed an innovative method of generating strong electric fields that can overcome random thermal motion by using carbon nanotubes as “lightning rods.” Using carbon nanotubes as electrodes researchers were able to generate strong DE trapping strength and push its molecular limits.

SUGGESTED USES

- Nanoelectronics and molecular electronics manufacturing.
- Electronically assisted chemical self-assembly.
- Nanomanufacturing and integrated circuits assembly.
- Nano-biotechnology and lab-on-a-chip devices.
- Self-fabricating nanowires and nanomachines.

ADVANTAGES

- Enables precise manipulation and trapping of nano-scale polarizable objects.
- Utilizes carbon nanotubes for enhanced performance and miniaturization.
- Facilitates the assembly of nano-scale electrical circuits.
- Supports advancements in nanochemistry, nanobiotechnology, and lab-on-a-chip applications.
- Overcomes limitations of traditional dielectrophoresis by achieving higher electric field gradients.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,102,527	08/11/2015	2003-289
United States Of America	Issued Patent	7,857,956	12/28/2010	2003-289

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OTHER INFORMATION

CATEGORIZED AS

- **Nanotechnology**
  - Electronics
  - Other
  - Tools and Devices

RELATED CASES

2003-289-0

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