

Ultrasensitive Ion Detector Using Carbon Nanotube and Graphene

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Description

In prior art, various ion detectors have been developed and used till date. Some of the most common ones are a Faraday cup and an air ion counter, having a large size, low sensitivity, and a high price; micro-channel plates with a higher energy input, complicated design, and a large size; and individual carbon nanotube based ion sensors having a complicated sensor mechanism. **This invention discloses the development and use of a novel, ultrasensitive ion detector made up of various carbon based nanomaterials such as carbon nanotubes and graphenes.**

Value Proposition

The ultrasensitive ion detector:

- Is associated with a low power input
- Is effectively operable over a wide range of substrates
- Enables a higher positional resolution and an ion source imaging as compared to prior art detectors
- Is highly sensitive, having capability to reach a single ion resolution
- Comprises a miniaturized size (nano to micro-scale) with high portability and flexibility as compared to conventional detectors
- Is light weight and highly cost effective as compared to conventional detectors
- Effectively allows for a tunable signal intensity by changing the bias on the device
- Would be commercially useful for the following applications:
 - Radioactive leakage monitoring
 - Radiation detection in battle field and nuclear power plant
 - High energy particle detection for astronaut working at outer space
 - Pressure sensor
 - Gas leaking monitor
 - Electron/ion beam monitor
 - Ion detectors
 - High resolution ion camera

Intellectual Property Status

Provisional Application 61/724,589

License Status

Available for license

