

Nano-Generators with Piezoelectric-Coated Carbon Nanotube (#4414)

A nanoscale power generation system that has improved power generation and service life

A Georgia Tech researcher has developed a nano-scale power generation system that has improved power generation and service life. This device includes piezoelectric-coated carbon nanotube generators that are capable of providing power to nanoscale systems for longer periods than conventional methods. Overall, the invention is a generator that includes a first conductive layer, a plurality of elongated piezoelectric nanostructures, and a conductive electrode. The plurality of elongated piezoelectric nanostructures extends upwardly from the first conductive layer. The plurality of elongated piezoelectric nanostructures includes a carbon nanotube core and a piezoelectric sheath enveloping at least a portion of the carbon nanotube core.

Benefits/Advantages

- Improved power generation
- Extended service life

Potential Commercial Applications

- Power generation
- Medical devices

Background/Context for This Invention

Many micro-scale and nano-scale machines have been proposed for use in medical devices. However, most of these machines are limited by the size of the power source that drives them. Specifically, many designs rely on chemical batteries to supply electrical power to the devices. Therefore, they can be no smaller than the battery used and are useful only so long as the battery is able to provide power.

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More Information

U.S. Patent Issued - [8,022,601](#)

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/nano-generators-piezoelectric-coated-carbon-nanotube>

Images:

The automated sequential delivery of multiple fluids. A varying number of delay gates imprinted in the branches are shown in the figure.

COVID-19 and flu saliva test on paper: (A) The automatic sequential delivery of multiple reagents required for virus test; (B) Water pouring into the device triggers the virus assay, allowing the presence of SARS-CoV-2 and influenza A & B viruses to be visually identified by the color changes in the corresponding detection spot