

Triboelectric Nanogenerator for Large-Scale Energy Harvesting (#6247)

A triboelectric nanogenerator (NG) as a means to harvest mechanical energy

Inventors at Georgia Tech have developed a triboelectric nanogenerator (NG) as a means to harvest mechanical energy on a large scale. This triboelectric NG has a substantially higher power output and a much simplified structure. Triggered by commonly available mechanical source such as footfalls, the NG was capable of lighting up 600 commercial LED lamps in real time. This system can be applied to potentially harvest large-scale mechanical energy such as rolling wheels, wind power, and ocean waves.

Benefits/Advantages

- **Increased power output** — scaled up NG to power hundreds of devices, not just one
- **Improved structure** — more inductive charges will be generated for this new design

Potential Commercial Applications

- Sensors
- Environmental monitoring
- Medical science
- Personal electronics
- Defense technology

Background/Context for This Invention

We are surrounded by enormous amounts of ambient mechanical energy that often goes to waste, including rain drops, human footfalls, air flow, and ocean waves. Research on mechanical energy harvesting has been mainly focused on small-scale energy harvesting, aiming at powering micro/nano-systems. There is a need to develop this technology to be applied to large scale applications.

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More Information

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/triboelectric-nanogenerator-large-scale-energy-harvesting>

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

