

Triboelectric Generators for Self-Powered Electronics

Guang Zhu, Zhong Lin Wang

Georgia Institute of Technology

For the first time, triboelectric effect is coupled with electrostatic induction as a fundamentally new technology of harvesting mechanical energy. Two basic operating modes, in-plane mode and out-of-plane mode were developed. Based on the two basic modes, a variety of structures were designed to harvest diverse forms of mechanical energy, including impact, pressing, sliding, rotation, air flow and even water flow. The maximum output power reaches 1.2 W with energy conversion efficiency of nearly 15%. It can be used as a direct power source to light up over 600 commercial multi-color LED bulbs simultaneously. This innovative technology has a number of advantages, including strong output power, low cost, easy fabrication, light weight, and flexible structure. These advantages make it a scalable and practical technology. It is likely that this technology will find widespread applications in people's daily life in the near future.