Hybrid Triboelectric-Electromagnetic Nanogenerator for Energy Scavenging

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This study presents a triboelectric (TENG) and electromagnetic (EMG) hybrid floor-tile nanogenerator to harvest the already expended energy of human footsteps for electrical energy conversion. TENG is composed of opposite charged layers of high-polarized Kapton and conductive Aluminum, whereas EMG utilized Copper coils and Neodymium magnets. The hybrid nanogenerator was connected via parallel circuit with a bridge rectifier to ensure efficient performance, which was measured with a VersaStat3 potentiostat and oscilloscope. Maximum hybrid output was 5 mA and 1200 V. Therefore, readily available energy is converted through a cost-effective, simple nanogenerator to decrease energy expenditures without any detrimental effects to the environment or humans.

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