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A fully-packaged and robust hybridized generator for harvesting vertical rotation energy in broad frequency band and building up self-powered wireless systems

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Abstract

Harvesting energies from surroundings to build up self-powered sensing systems is very useful in our daily life. In this work, we design a cylinder-like fully-packaged hybrid nanogenerator for harvesting vertical rotation energy in broad frequency band by utilizing a magnet rod as the trigger to drive contact-separation mode triboelectric nanogenerator (TENG), and by coupling magnet rod with copper coils to operate electromagnetic generator (EMG). The stator-free structure makes the device more facile to be installed on the rotation objects. The output performances of TENG and EMG under various rotation speeds are systematically studied and clearly demonstrated by installing the device on a balance car, which proves that TENG can

¹ J. Chen and H. Guo have equal contribution to this work

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