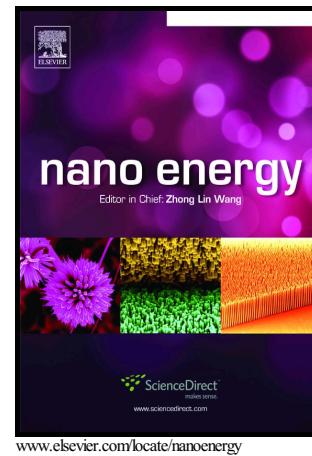


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ABSTRACT

The frequent occurrence of natural disasters is a major threat to the property and casualties of human beings in recent decades. Disaster prone points can be very closely monitored by augmenting the distribution of wireless sensor networks. However, regularly replacing the battery of electronics remains a significant challenge especially in a remote area. In this study, we report a wind-driven hybridized energy harvester which is designed for rotating energy harvesting and can be integrated with WSN technology to develop a self-powered natural disaster monitoring system. In this harvester, the rotator is directly driven by external rotational motion thus can easily hybridize the TENG with eighteen EMGs. Consequently, the fully packaged WH-EH device combining with the water-proof flexible solar cell can be completely isolated from the harsh wilderness environment. The output feature of TENG of high voltage but low current that perfectly compensate for the differing performance of EMG to achieve an excellent output power of the hybrid device with a broad frequency range.

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