sensors

MDPI

Supplementary Materials

Self-Powered and Autonomous Vibrational Wake-Up System Based on Triboelectric Nanogenerators and MEMS Switch

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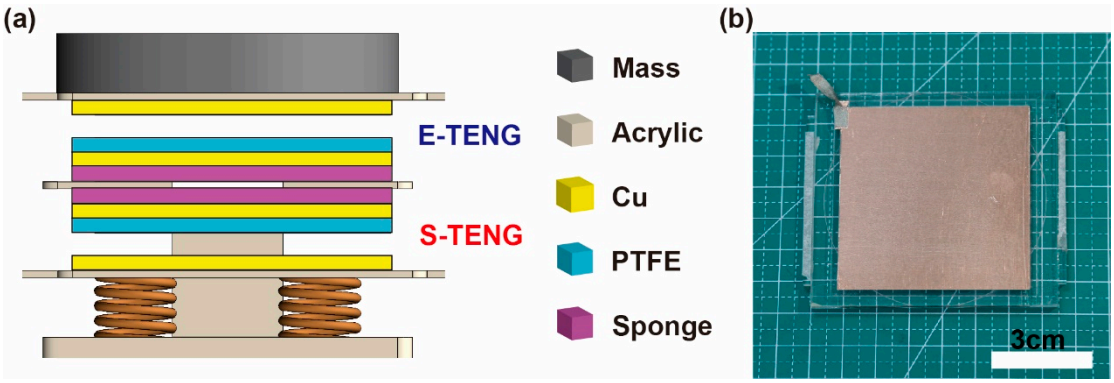

Figure S1. The structure schematic of the integrated vibration TENG. (**a**) The 3D structure schematic of the integrated vibration TENG. (**b**) The photograph of the actual contact area for TENG.

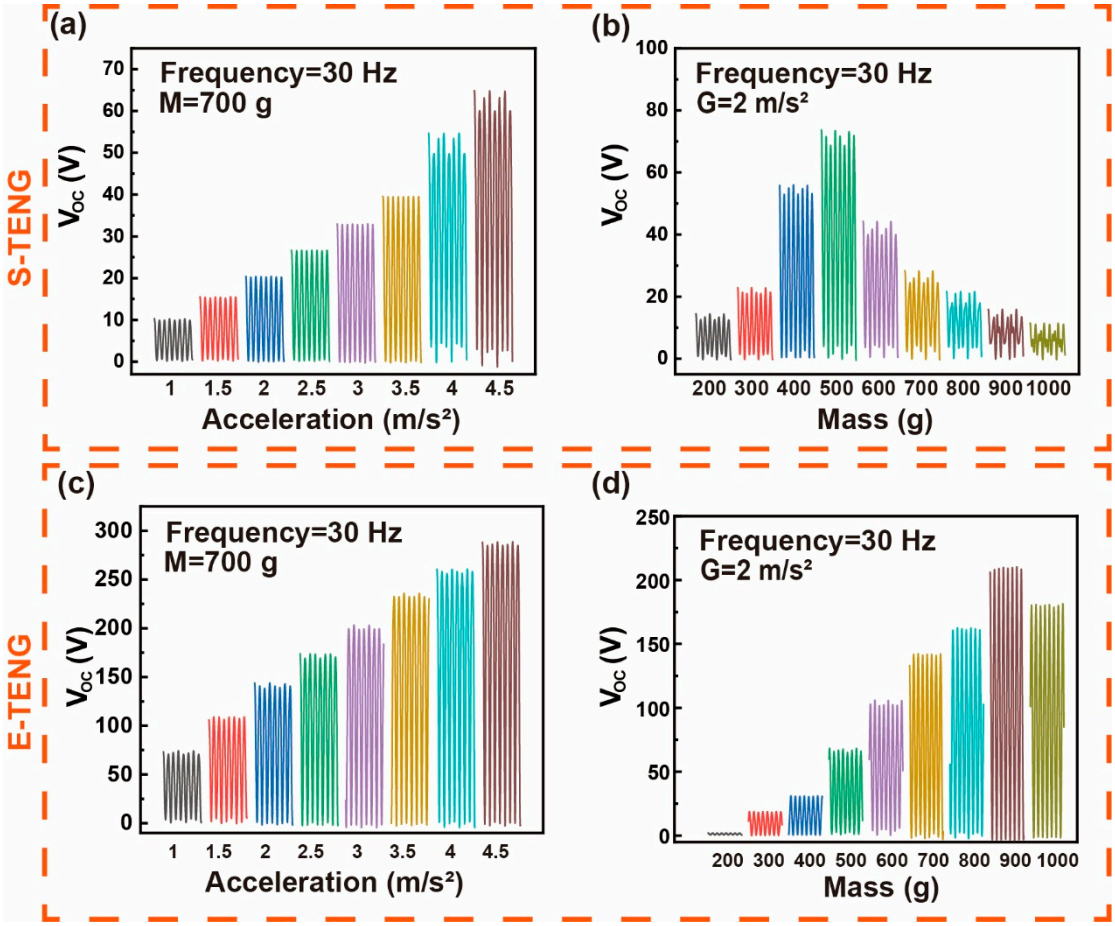

Figure S2. Characteristics of the S-TENG and E-TENG. (**a**) (**b**) The open-circuit voltage waveforms of the S-TENG at different accelerations and mass. (**c**) (**d**) The open-circuit voltage waveforms of the E-TENG at different accelerations and mass.

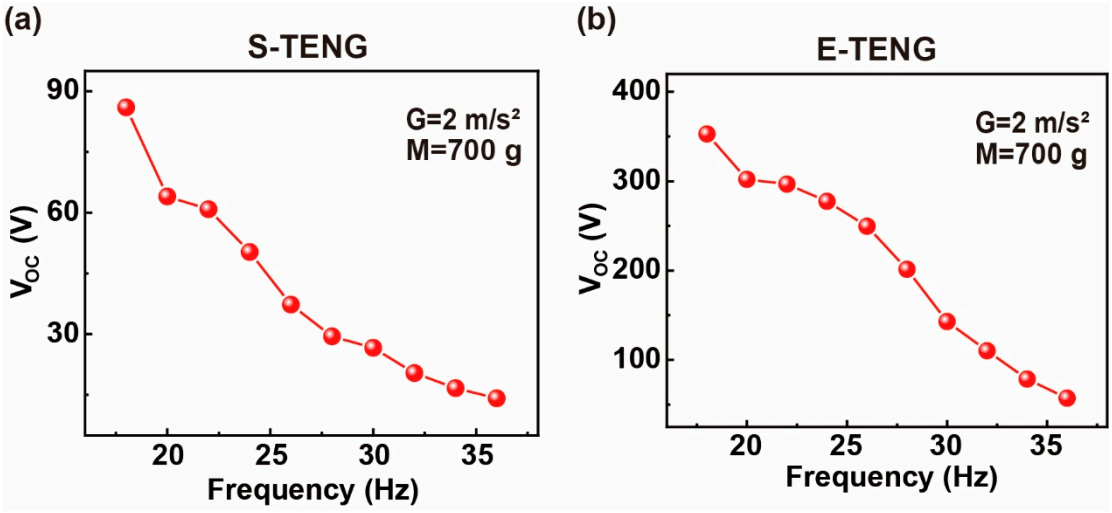

Figure S3. The open-circuit voltage of S-TENG and E-TENG in different frequencies.

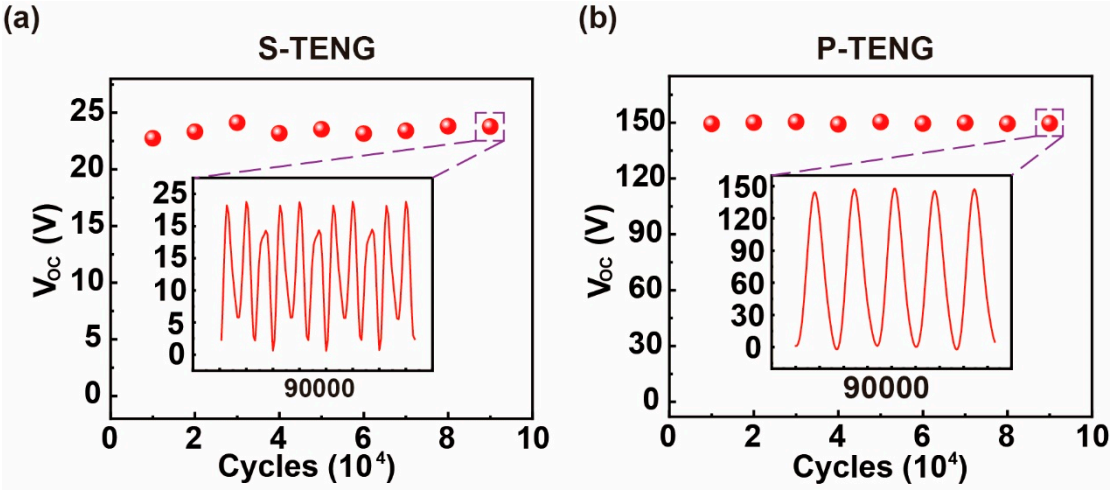

Figure S4. The durability test results of the S-TENG and E-TENG.

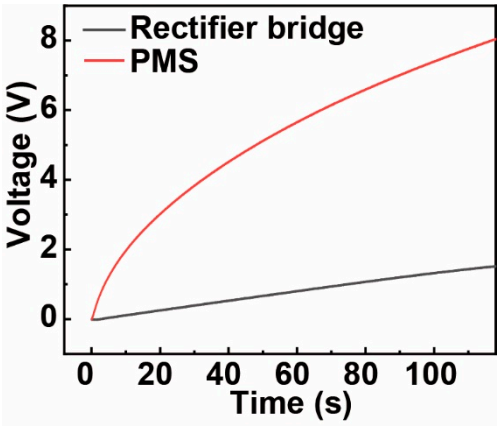

Figure S5. Comparison of direct charge circuit with only one rectifier bridge and through the PMS charging for a 330μF capacitance.

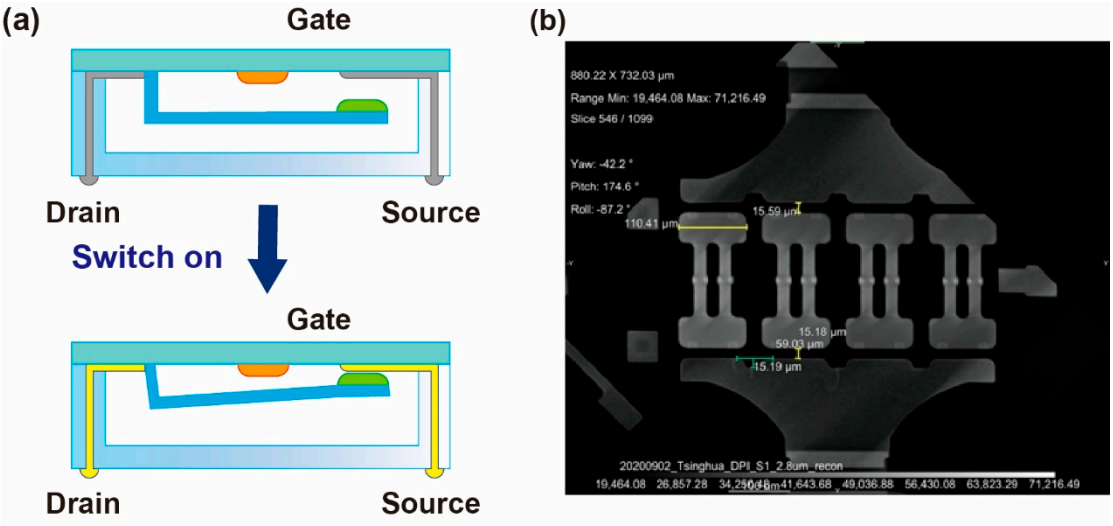

Figure S6. Structure and microstructural diagram of MEMS switch.

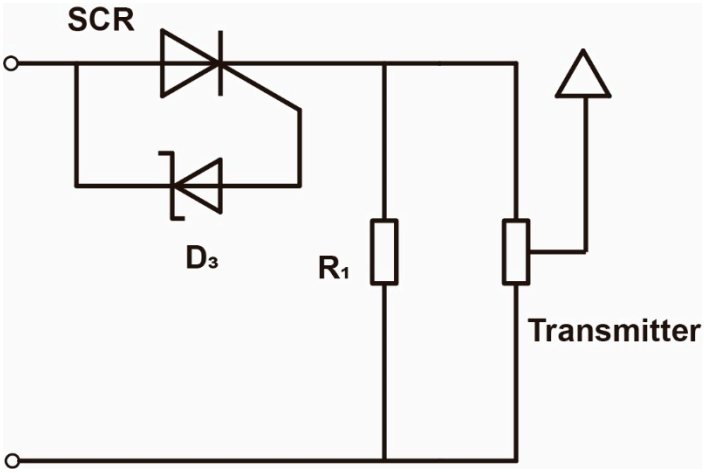

Figure S7 The circuit schematic diagram of the load. The SCR model is EC103M1. The D_3 is a Zener diode with a value of 3.3V. The R_1 has a resistance of 4.7kΩ, which acts as a discharge resistor to prevent the SCR from closing until the signal has been sent completely.

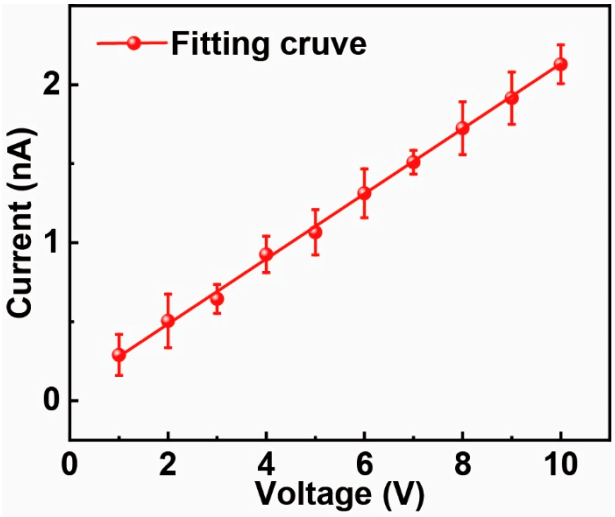

Figure S8. Leakage current of MEMS switch. The leakage current increases linearly as the voltage between beam and contact increasing.

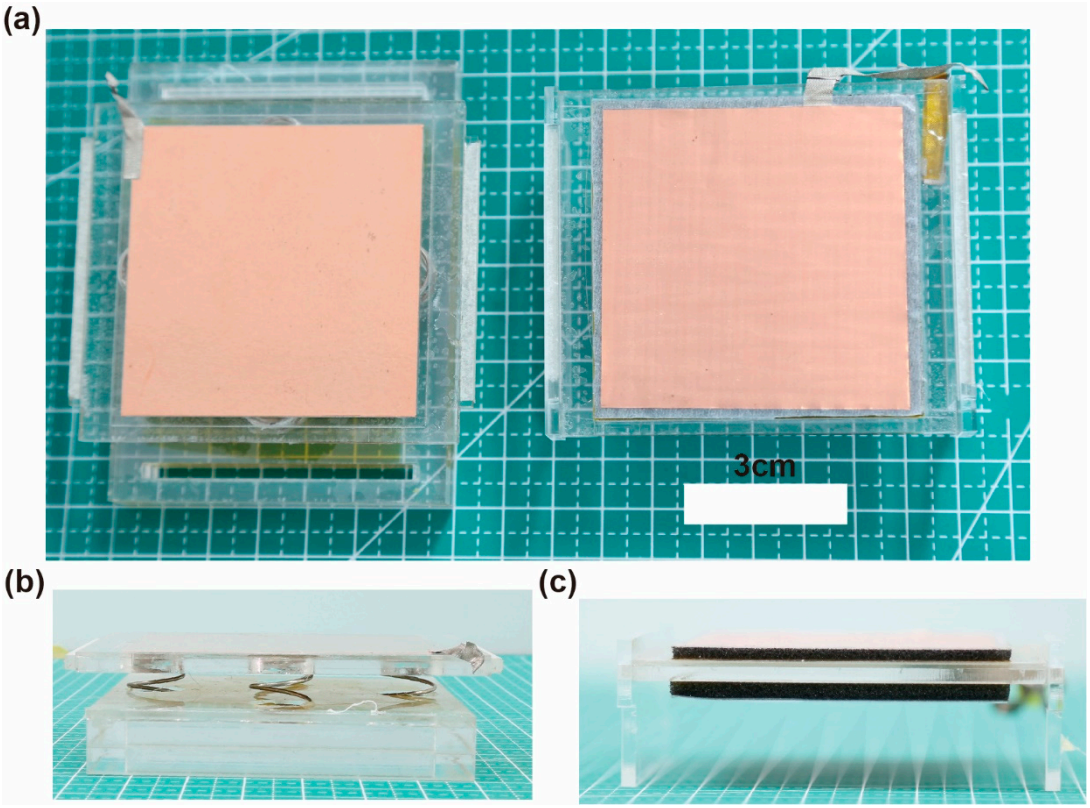

Figure S9. The optical picture of the specific internal structure of the integrated TENG. (**a**) The photo of the base plate, moving layer, and stationary layer. (**b**) Side view of the base plate and the moving layer. (**c**) Side view of the stationary layer.

Supplementary Videos:

Video S1. The working demo of SAVWS.