Self-powering system with wireless data transmission

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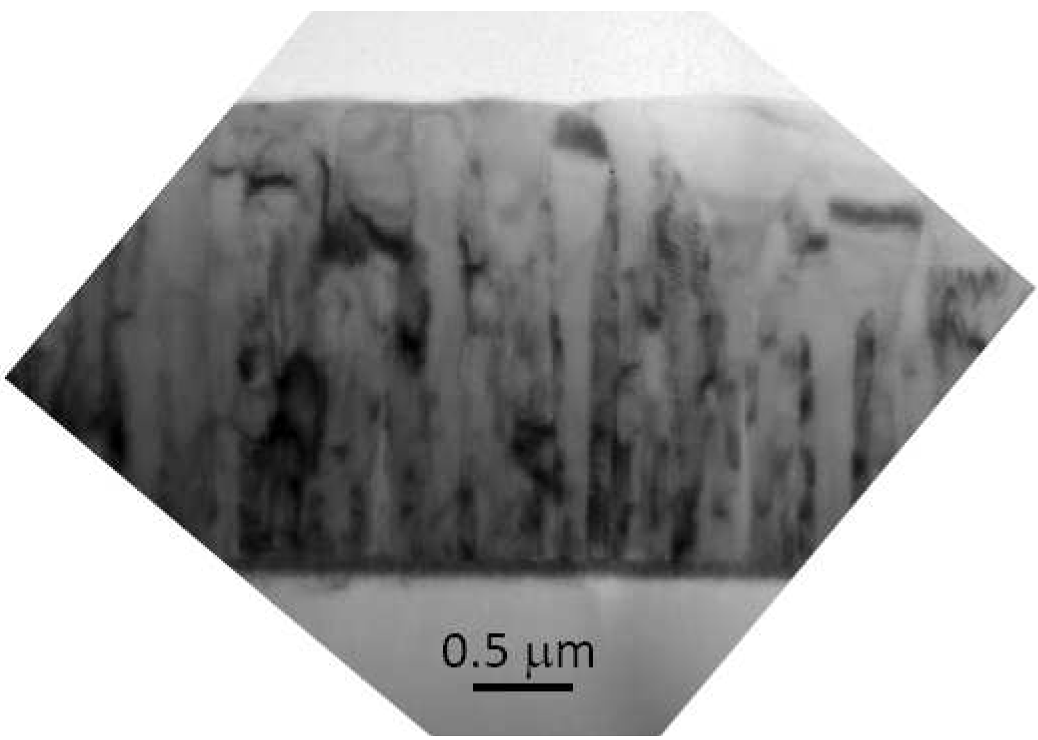
Fig. S1. Cross-section transmission electron microscopy image of a nanowire film showing that all of the nanowires grow vertically and finally join together to form a film.



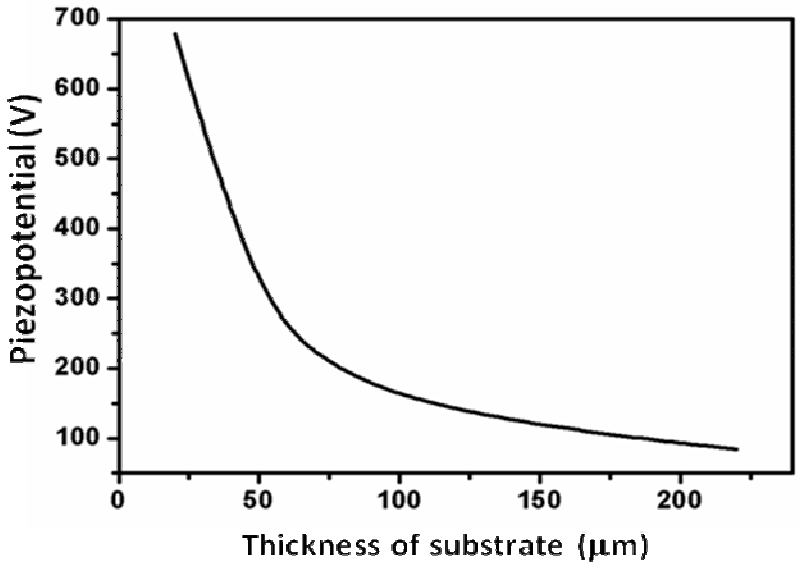
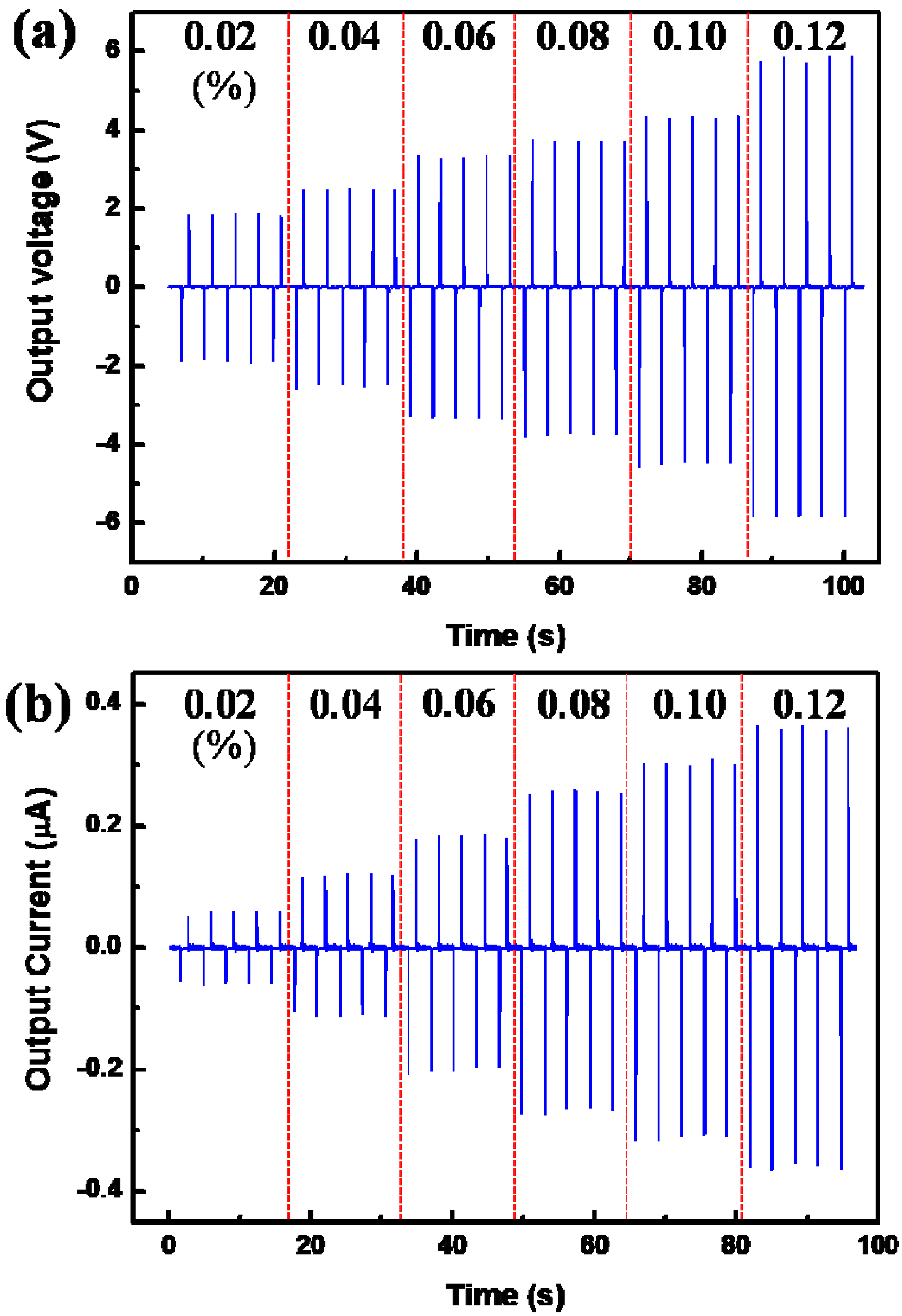


Fig. S2. Calculated piezopotenital between the top and bottom electrodes as a function of the thickness of the substatrate while the applied stress is fixed. When the length of the nanowire is kept at 2 mm, if we fix the applied stress at 8 MPa, the calculated piezopotential difference between the top and bottom electrode increases as the thickness of substrate is reduced.

Video

Testing of the RF transmitter. The RF transmitter part was triggered by the energy generated and stored during three straining cycles of a nanogenerator. There was a disturbing noise received by the radio when the transmitter was powered. It was checked that such noise was truly from the signal transmitted by the RF unit rather than mechanical action such as switching or any other disturbances. The radio frequency was 90 MHz.

Fig. S3. Performance characterization of the NG with increasing strain. (a) Open circuit voltage and (b) Short circuit current measurement of the NG with increasing strain at a given straining rate of 3.56% s-1.


(a)
0.02
(%)
0.04
0.06
0.08
0.10
0.12
Output voltage (V)
Time (s)
(b)
0.02
(%)
0.04
0.06
0.08
0.10
0.12
Output Current (μA)
Time (s)