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Supporting Information for

Nanogenerators Based on Vertically Aligned InN Nanowires

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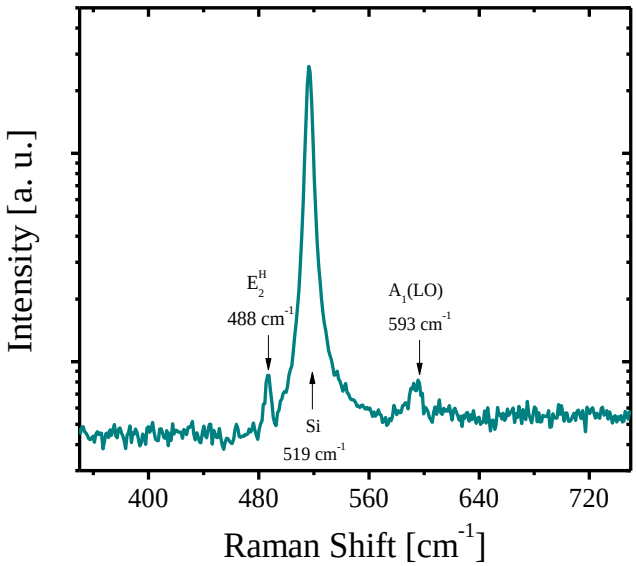

Fig. S1 Room-temperature Raman spectrum of Mg-doped InN NWs, showing a very narrow E_2^h phonon peak at 488 cm^{-1} and A_1(LO) mode at 593 cm^{-1}.

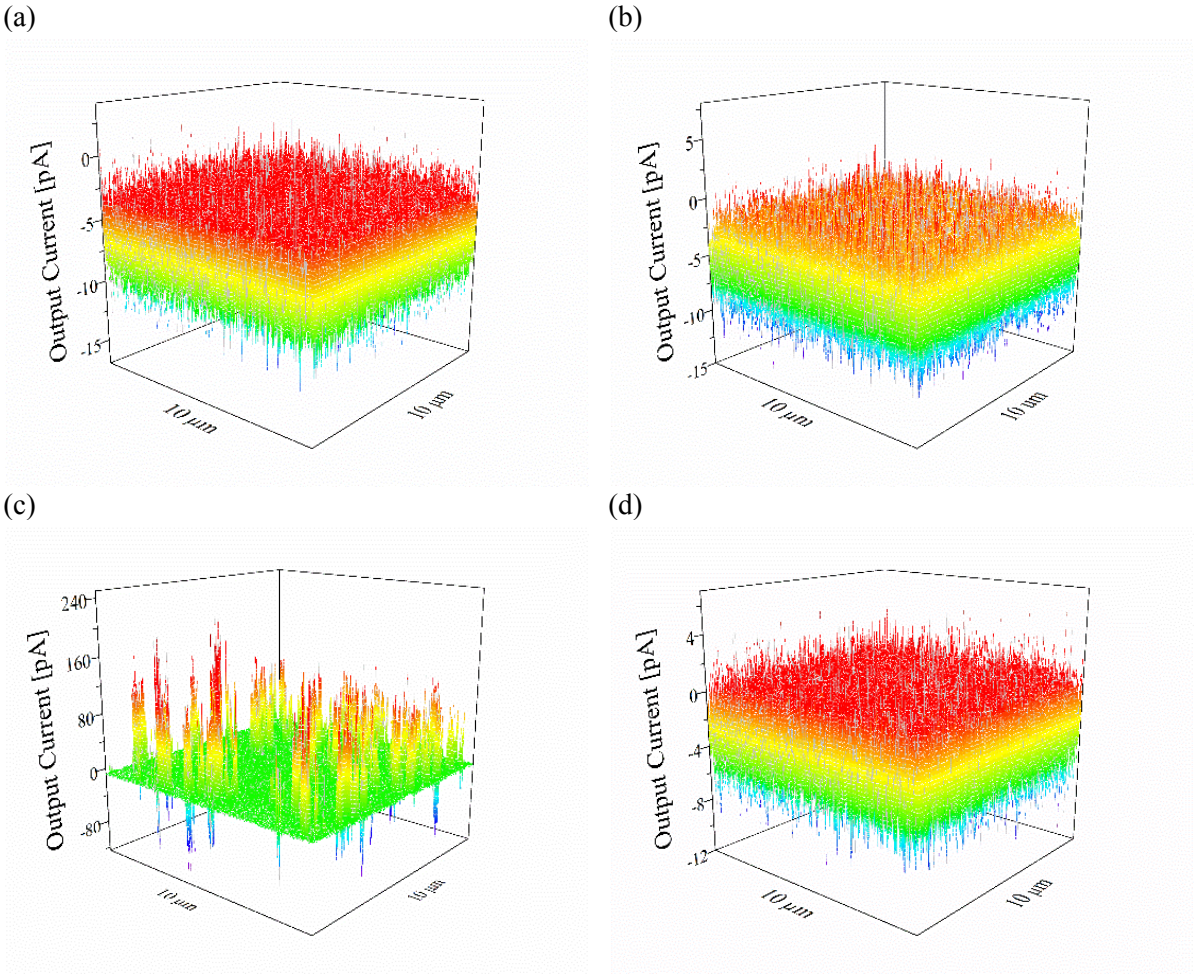

Fig. S2 3D positive and negative current output signals when scanning over an area of 10 μm×10 um for (a) Si substrate, (b) doped and (c) intrinsic GaN NWs with Pt tip and (d) *p*-type InN NWs with a Si tip.

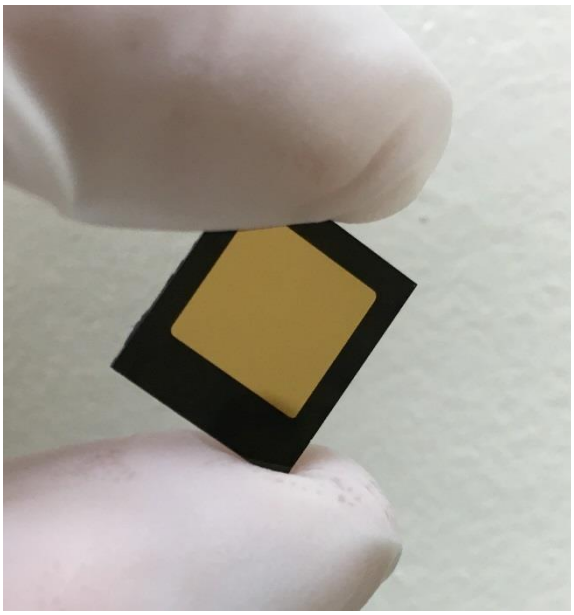

Fig. S3 Photograph of a fabricated *p*-type InN NWs-based nanogenerator.

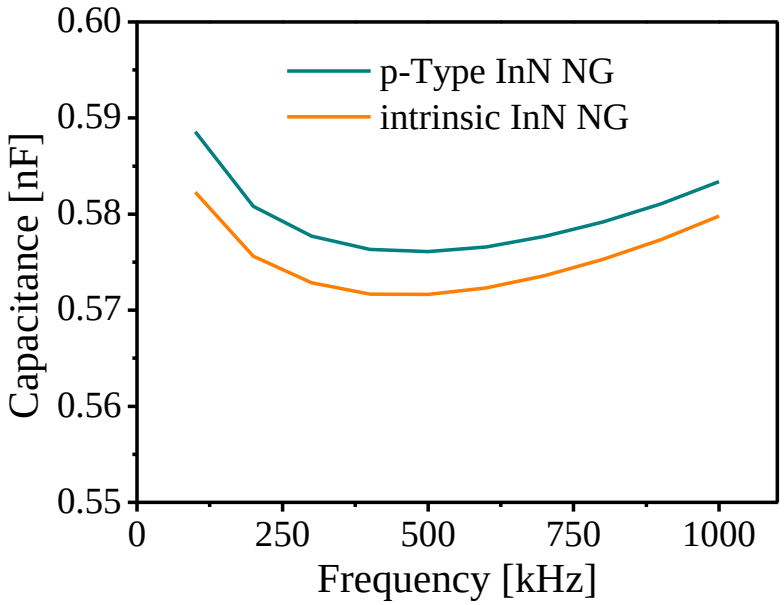

Fig. S4 shows the capacitance-frequency response of InN NG device investigated by using Keithley 4200-SCS semiconductor characterization system that is carefully calibrated before measurements with the suppression of the noise down to 1fF in a wide frequency range.

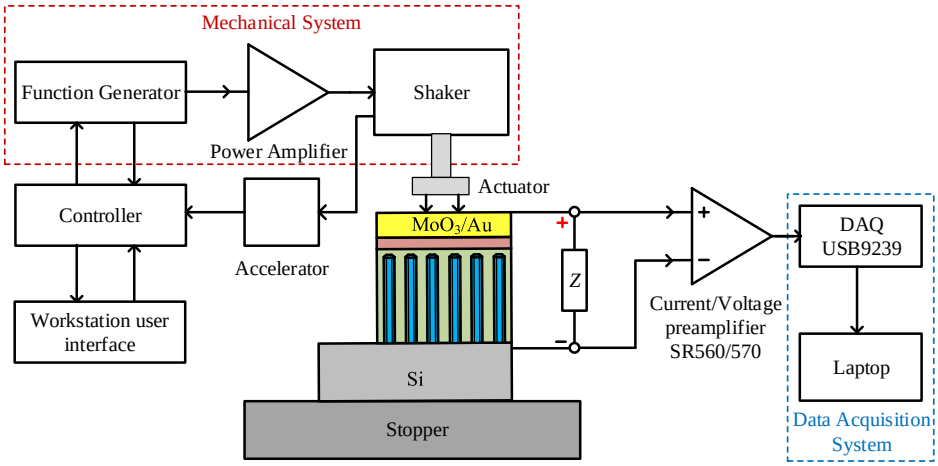

Fig. S5 The schematic setup for measuring the output current/voltage of fabricated InN NW-based NGs. The system includes a close loop controller (Vibration Research Corporation, VR9500) and a linear shaker (Labworks Inc., ET-126B-1). The shaker provides sinusoidal waves simulating a vibration source with a known amplitude. Output voltage and current signals are measured using Stanford low-noise voltage/current preamplifiers (Model SR560/570) and a National Instruments I/O module (NI CompactDAQ USB-9239). The input resistances of the preamplifiers are 100 MΩ (SR560) and 10 kΩ (SR570), respectively.

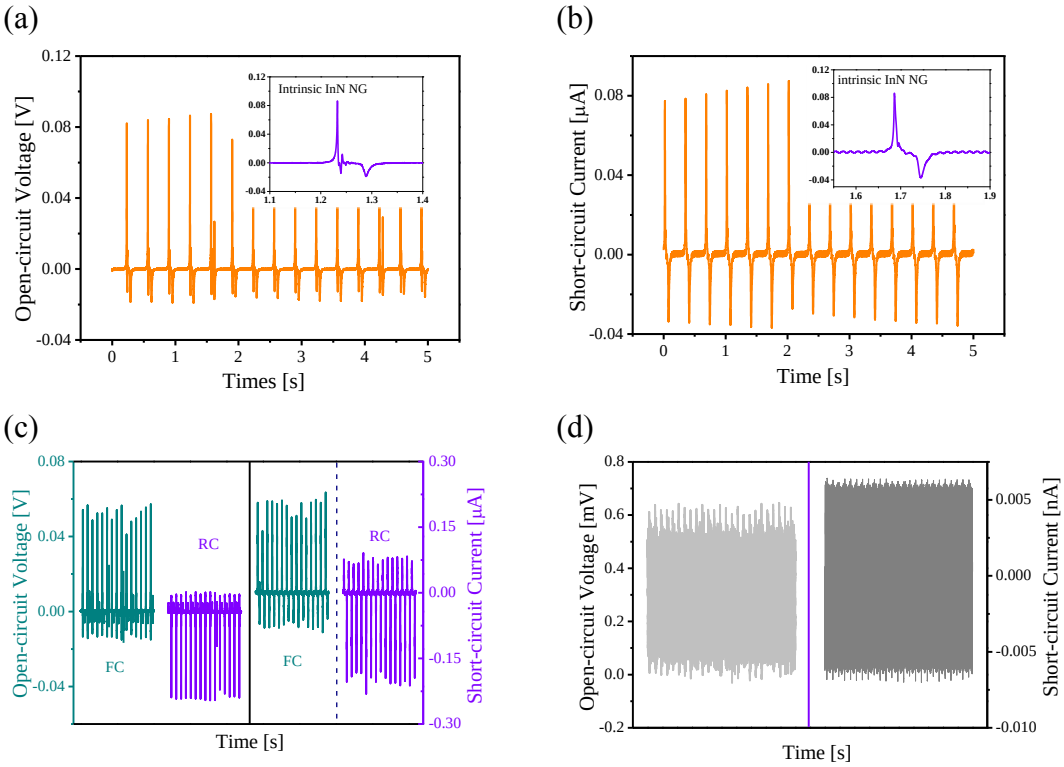

Fig. S6 The piezoelectric characteristics of the NGs at an excitation with an acceleration amplitude of 2 m/s^2 and a frequency of 3 Hz. The measured (a) open-circuit voltage, an average peak value of ~0.085 V, and (b) short-circuit current, an average peak value of 80 nA, for intrinsic-type. The insets show signals from one cycle of mechanical vibration. (c) The measured open-circuit voltage and short-circuit current of the *p*-type NG under the forward and reversed connection conditions. (d) The measured open-circuit voltage and short-circuit current of the Si/PMMA/MoO_3/Au film.