

Supporting Information

Generating Electric Current Based on the Solvent-dependent Charging Effects of Defective Boron Nitride Nanosheets

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1. The synthetic approach for BNNSs

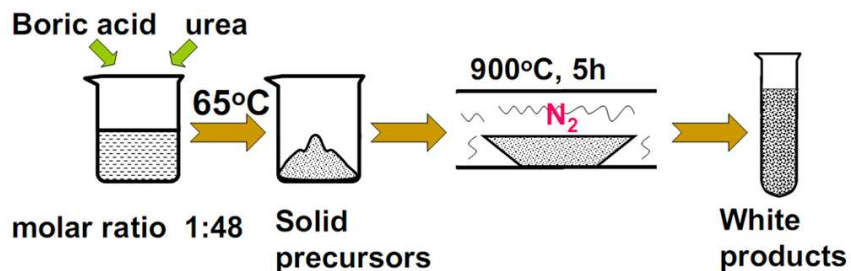


Figure S1. Schematic illustration of the synthesis process for BNNSs via a chemical method.

2. The XRD pattern of BNNSs

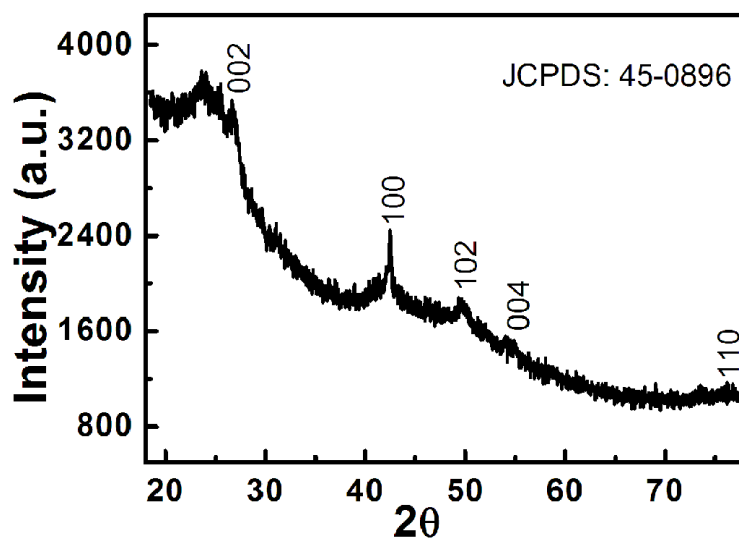


Figure S2. The XRD pattern shows the characteristic diffraction peaks of BNNSs.

3. The EFM measurement of BNNSs

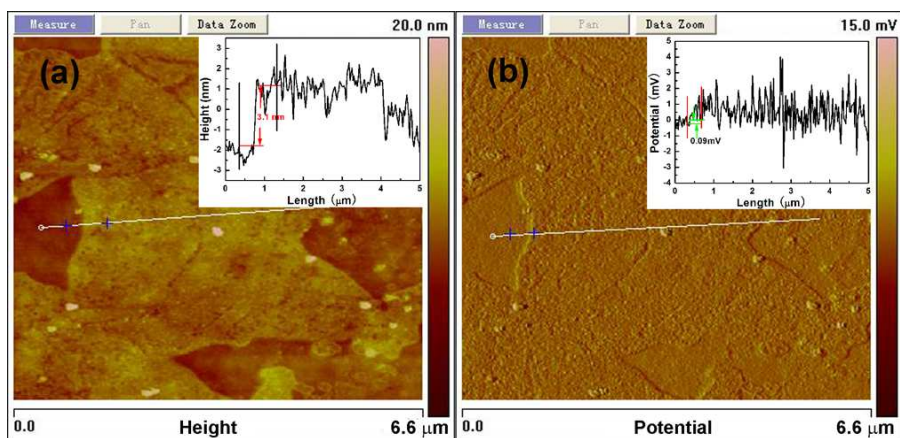


Figure S3. (a) the AFM image of the BNNSs and the corresponding line-scan profile;

(b) The EFM image of the BNNSs and the corresponding line-scan profile.

4. The images of BNNSs film

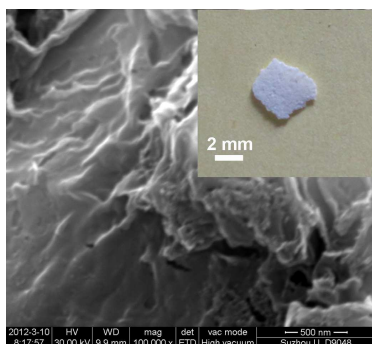


Figure S4. The SEM of BNNSs film, the inset image is the photograph of the film.

5. The fabrication of the generator

The BNNSs film with the tape was fixed on an aluminum plate with diameter of 13.2 mm and thickness of 0.8 mm. An aluminum membrane with thickness of 5 μm was installed above the film. The distance between the SiNWs and the Al membrane was set to 5 μm using a Teflon tape as the insulating spacer. Electrodes were connected to the aluminum membrane and plate, respectively. Then the assembled device was mounted 1.5 cm away from a metal sound fork with an operation frequency of 440 Hz. The output current as response to the vibration was collected by an external circuit at room temperature with a Keithley 4200-SCS semiconductor characterization system.

6. The current generated from the nanogenerator without BNNSs

The detected signals from the identical device structure with the exfoliated BNNSs (Figure S5) and with no BNNSs was much lower than the background current with BNNSs (Figure S6) when other experimental parameters kept unvaried. These results demonstrated it was the BNNS film that was responsible for the obtained current.

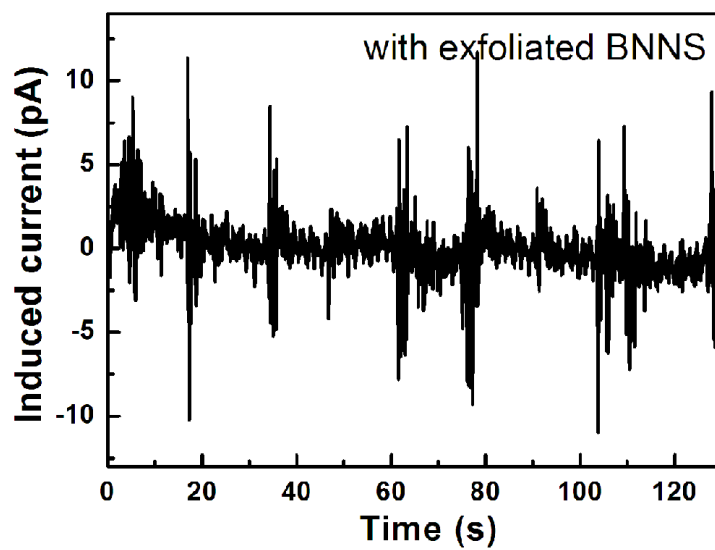


Figure S5. The detected signals with the exfoliated BNNSs from the identical device structure

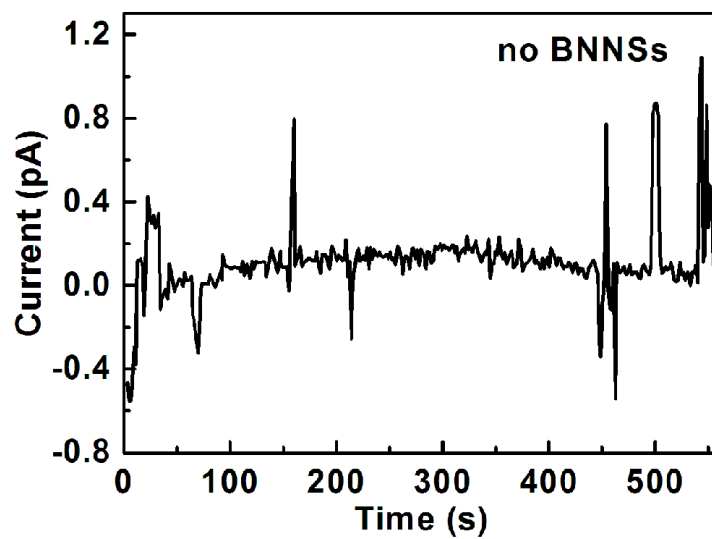


Figure S6. The detected signals without BNNSs from the identical device structure.