ADVANCED FUNCTIONAL MATERIALS

Supporting Information

for *Adv. Funct. Mater.,* DOI: 10.1002/adfm.201401599

Layer-by-Layer Controlled Perovskite Nanocomposite Thin Films for Piezoelectric Nanogenerators

Younghoon Kim, Keun Young Lee, Sun Kak Hwang, Cheolmin Park, Sang-Woo Kim, and Jinhan Cho**

Supporting Information

Layer-by-Layer Controlled Perovskite Nanocomposite Thin Films for Piezoelectric Nanogenerators

Younghoon Kim, Keun Young Lee, Sun Kak Hwang, Cheolmin Park, Sang-Woo Kim and Jinhan Cho**

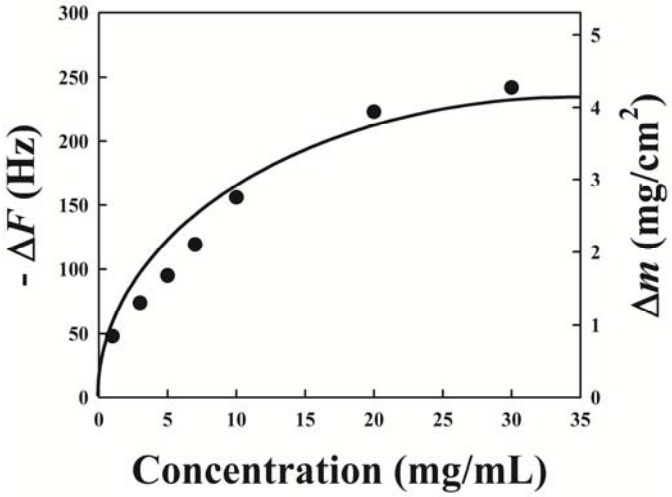

Figure S1. The adsorbed amount of 13-nm OA-BTO_{NPs} onto the PAA-coated QCM electrode as a functonf of 13-nm OA-BTO_{NP} solution concentration.

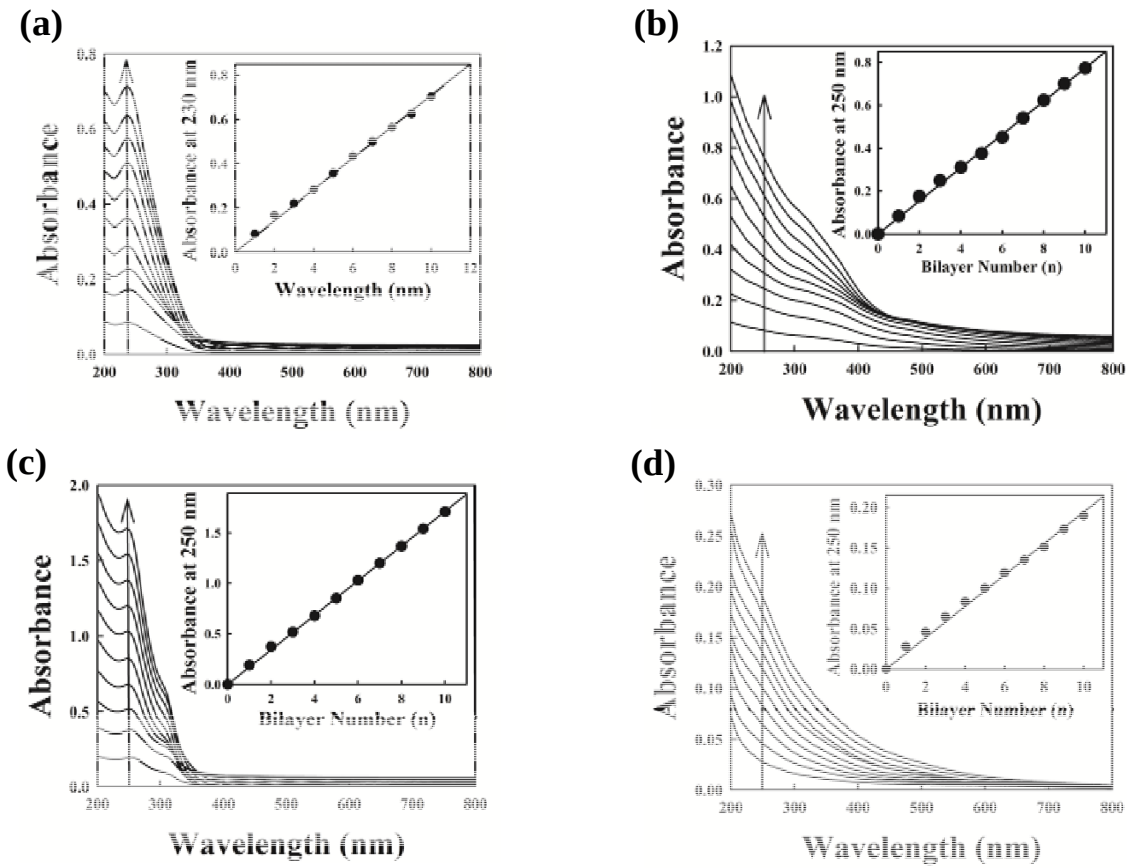

Figure S2. UV-vis spectra of (a) $(PAA/OA\text{-}BTO_{NP})_n$, (b) $(PAA/OA\text{-}Fe_3O_4)_n$, (c) $(PAA/OA\text{-}TiO_2)_n$, and (d) $(PAA/OA\text{-}MnO_x)_n$ multilayers as a function of bilayer number (n). The inset data show the UV-vis absorbance of $(PAA/hydrophobic\ NP)_n$ multilayers as a function of bilayer number.

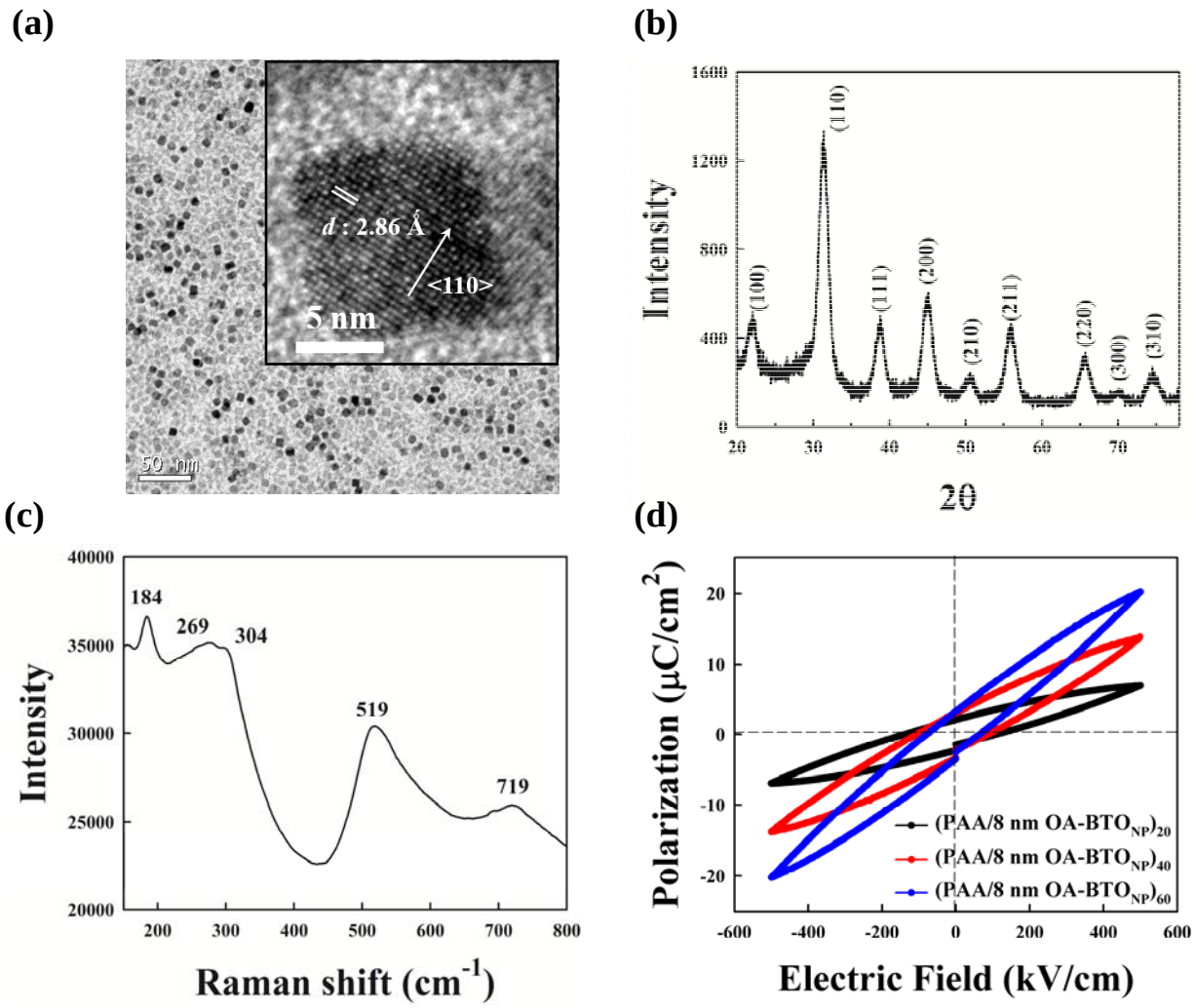

Figure S3. (a) HR-TEM image, (b) XRD pattern and (c) Raman spectrum of 8 nm OA-BTO_{NPs}. (d) The polarization-electric field (*P*-*E*) curve of PAA/8 nm OA-BTO_{NP} multilayers as a function of layer number under the applied electric field of ± 500 kV·cm^{-1}.

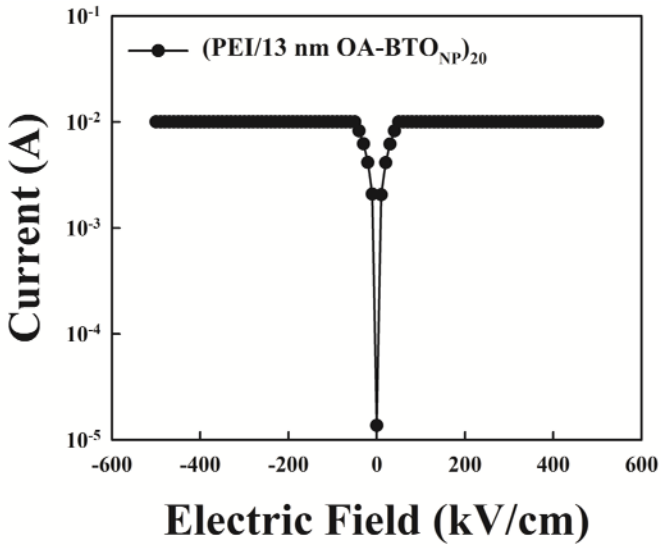

Figure S4. Current measurement of PEI/13 nm OA-BTO$_{NP}$ multilayer under the electric field of ± 500 kV·cm^{-1}.

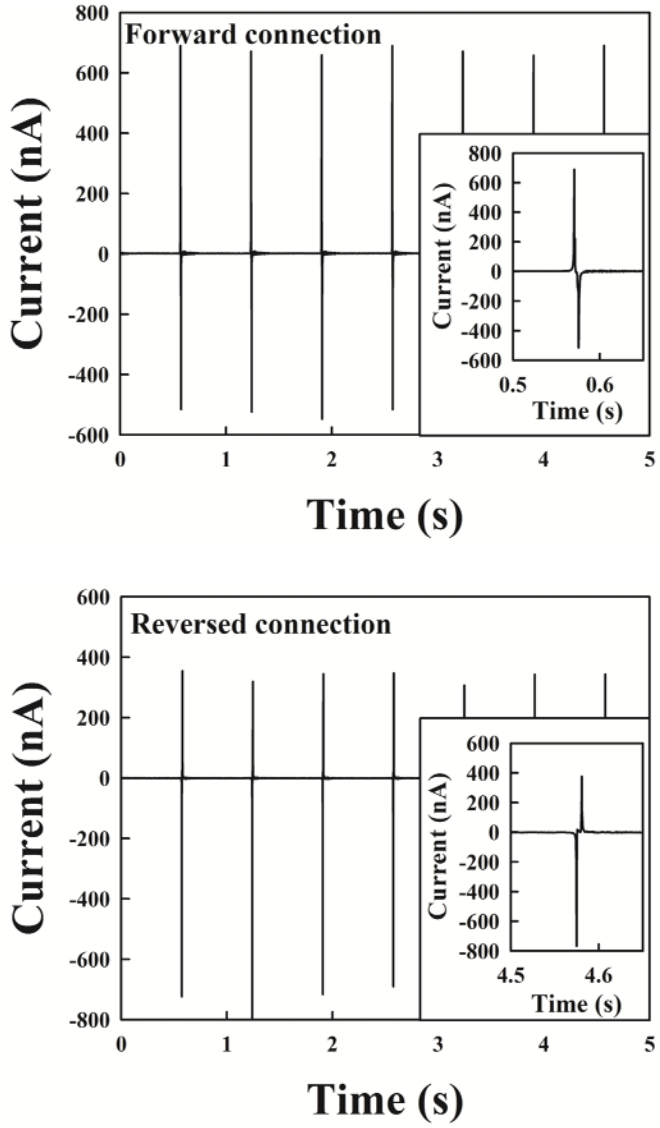

Figure S5. The polarity-switching tests for current demonstrate that the output signals are from (PAA/13 nm OA-BTO_{NP})$_{100}$ multilayer-based piezoelectric NG rather than the instruments.

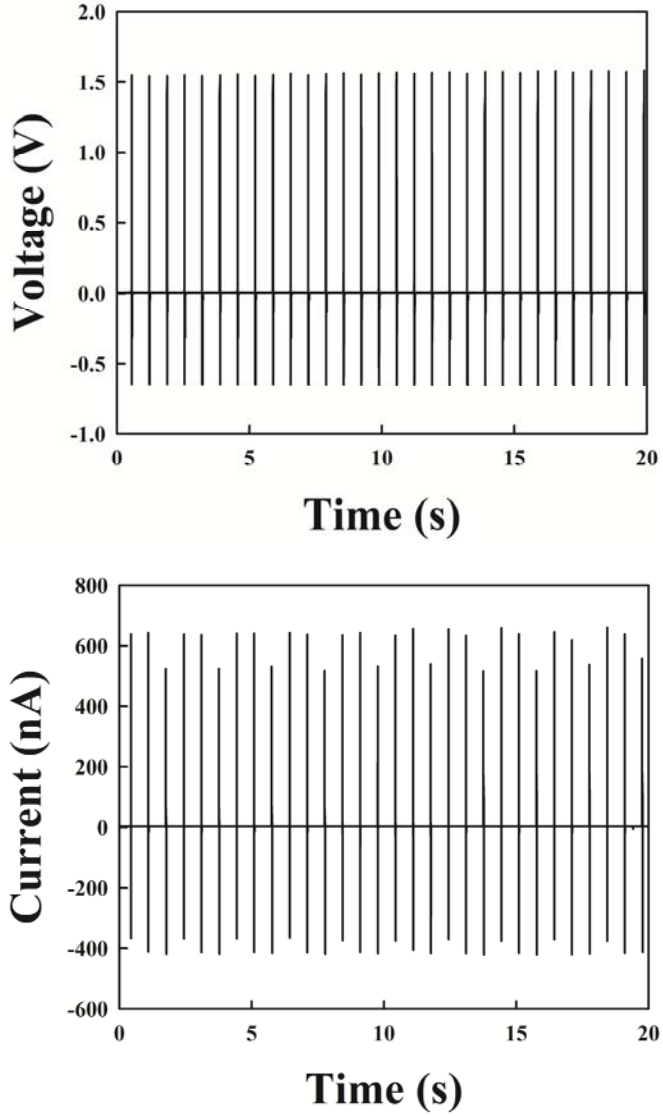

Figure S6. Output voltage and current of (PAA/8 nm OA-BTO_{NP})$_{100}$ multilayer-based piezoelectric NGs under a compressive force (5.2 kgf).

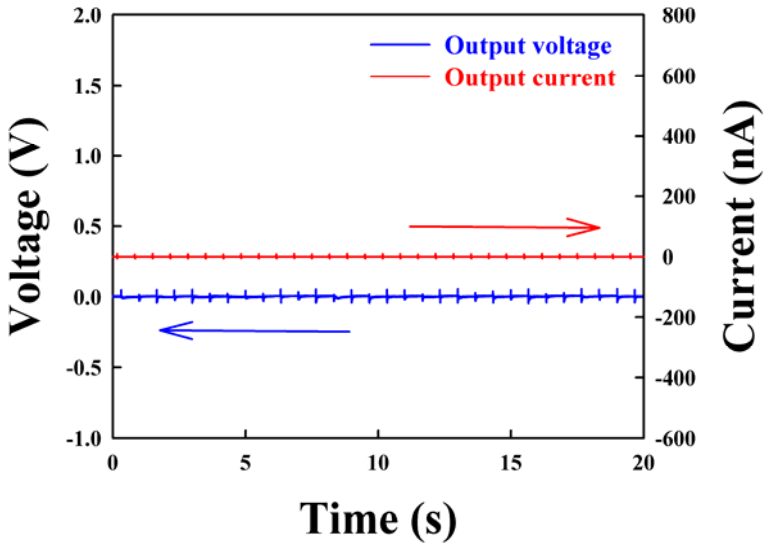

Figure S7. Output voltage and current of (PEI/13-nm OA-BTO_{NP})$_{100}$ multilayer-based piezoelectric NGs under a compressive force (5.2 kgf).