Supplementary Information

Boosting Performance of Self-Polarized Fully Printed Piezoelectric Nanogenerators via Modulated Strength of Hydrogen Bonding Interactions

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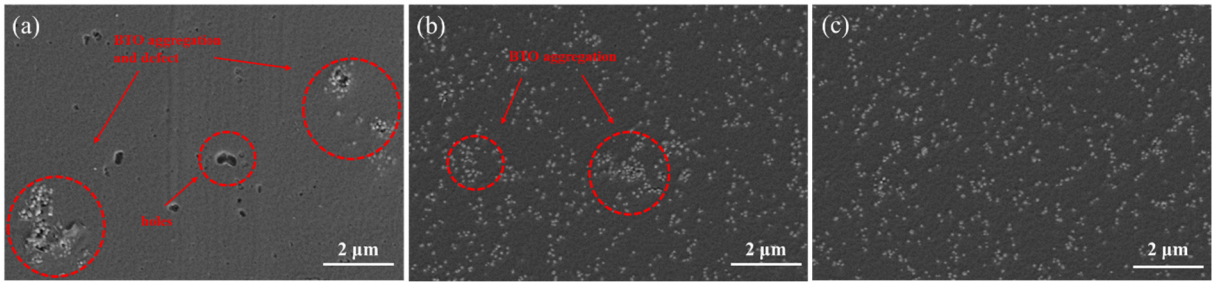

Figure S1. SEM images of the surfaces of the as-printed films: (**a**) 20 wt% BTO/PVDF, (**b**) 20 wt% PDA-BTO/PVDF and (**c**) 20 wt% PFD-BTO/PVDF.

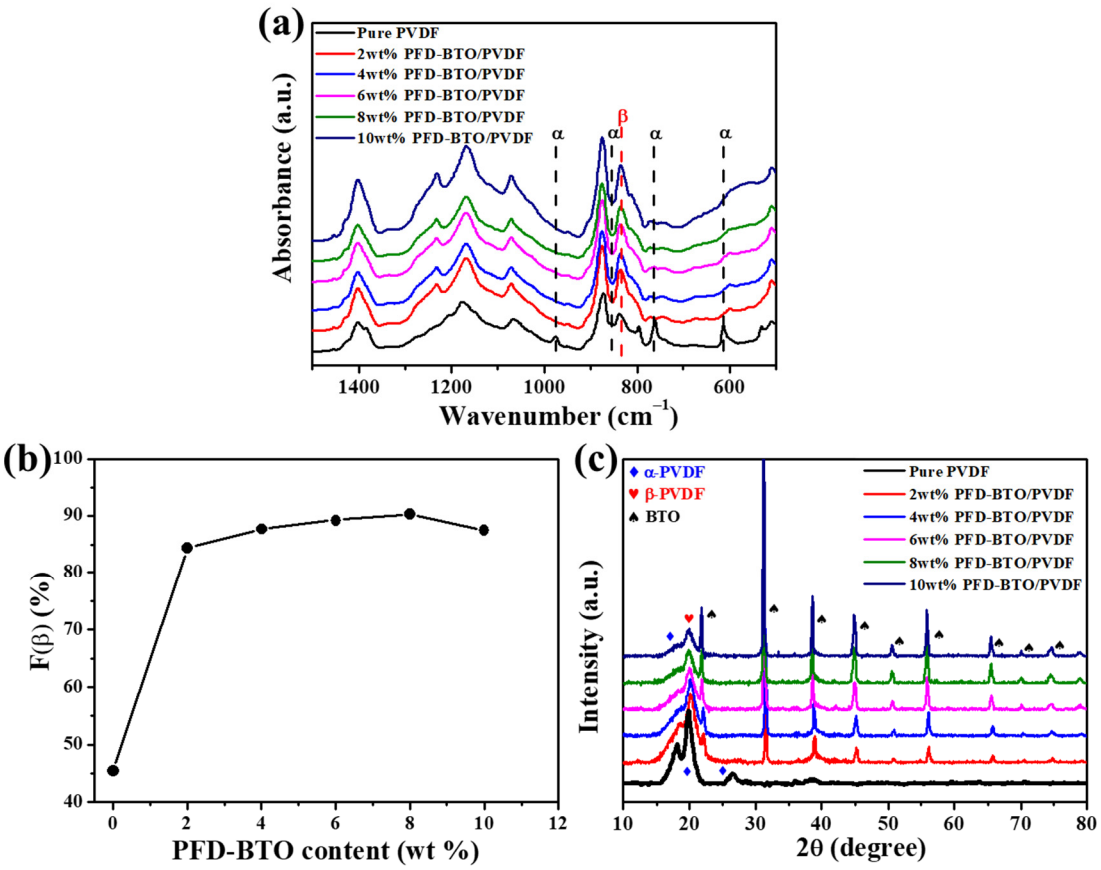

Figure S2. (**a**) FT-IR spectra of the printed PVDF films with various PFD-BTO nanoparticle contents, (**b**) The F(β) value variation in the printed samples as a function of the or PFD-BTO nanoparticle content and (**c**) XRD pattern of the printed PVDF films with various PFD-BTO nanoparticles contents.

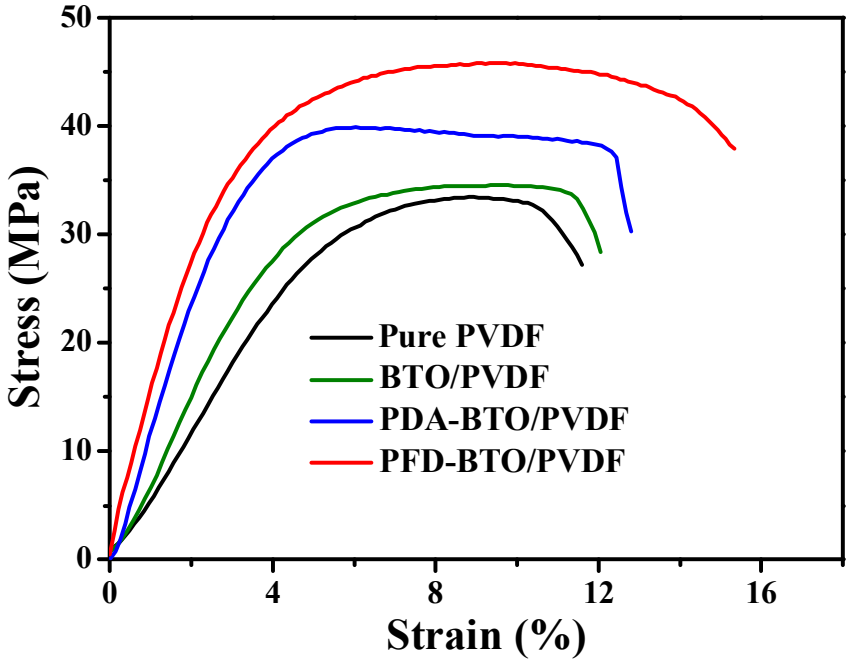

Figure S3. Stress–strain curves of the pure PVDF, BTO/PVDF, PDA-BTO/PVDF and PFD-BTO/PVDF films.

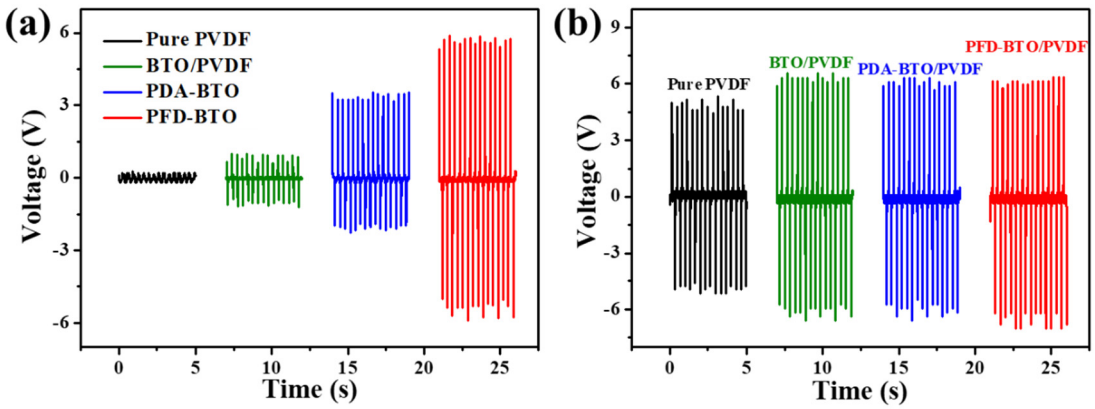

Figure S4. Output voltage output of the pure PVDF, BTO/PVDF, PDA-BTO/PVDF and PFD-BTO/PVDF based PENGs without (**a**) and with (**b**) electric poling

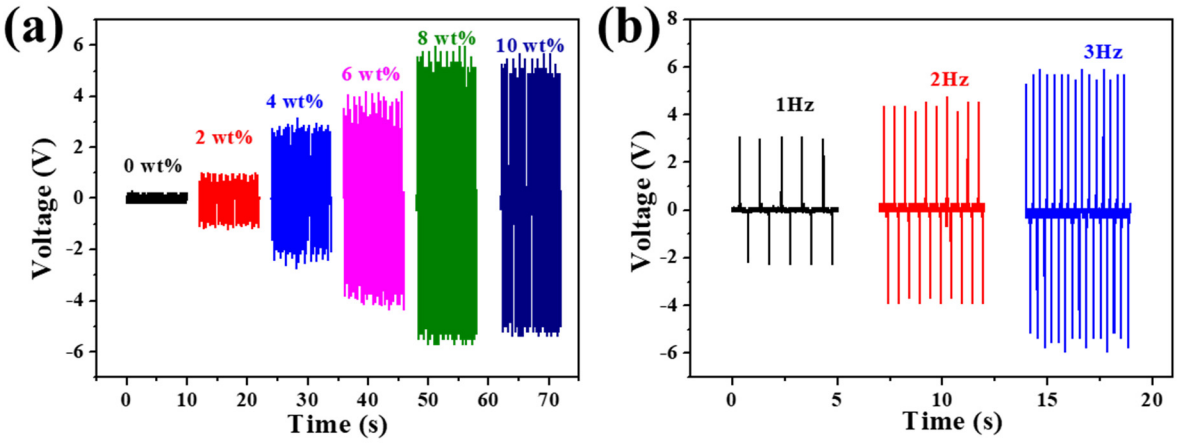

Figure S5. (**a**)Output Voltages of the printed PVDF films with different contents of PFD-BTO nanoparticles with a frequency of 3 Hz and a compress force of 100 N and (**b**) Output voltages of the 8 wt% PFD-BTO/PVDF based PENGs at different impacting frequencies under a constant pressure force of 100 N.

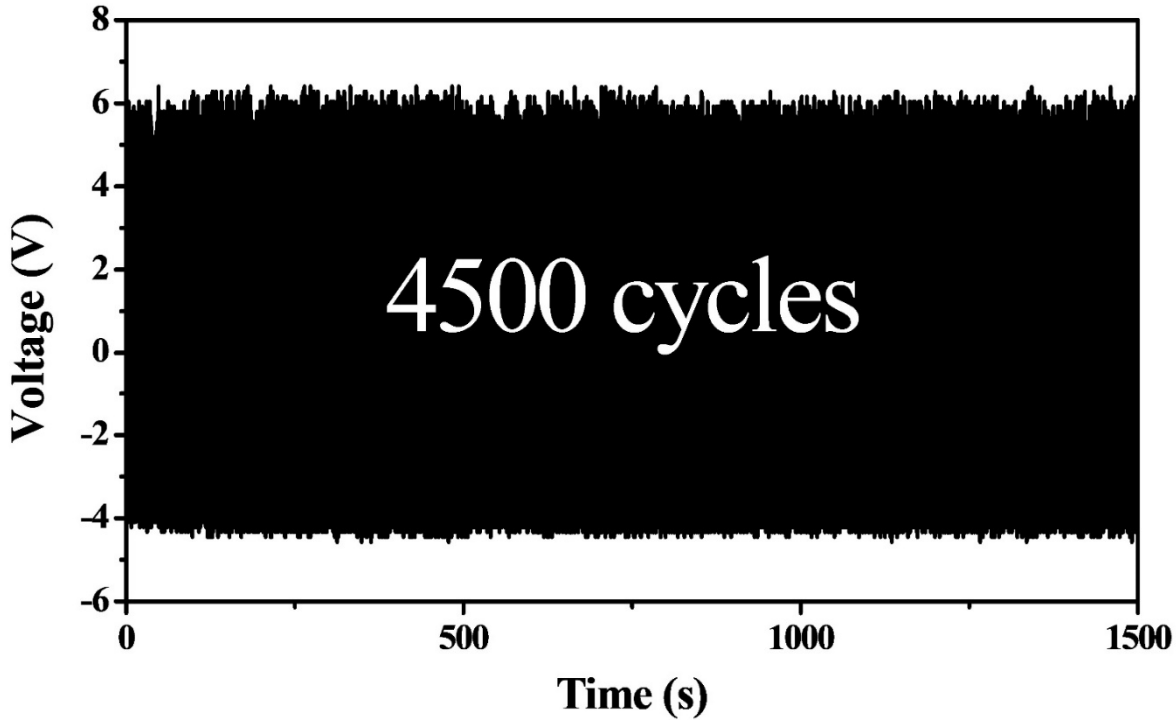

Figure S6. Output voltages of the PFD-BTO/PVDF based PENGs after one month under repeated impact force conditions for 4500 cycles with a frequency of 3 Hz and a pressure of 500 kPa.

Table S1. Summary of PVDF-based materials in our study and other reported studies.

Material	Poling process	Output voltage	Ref.
PDA@BTO/PVDF-TrFE	Yes	6V	1
BTO/PVDF	Yes	6V	2
GAg/PVDF	None	0.1V	3
SWCNTs/PVDF-TrFE	None	1.2V	4
Fe-RGO/PVDF	None	5.1V	5
RGO/PVDF-TrFE	None	2.4V	6
dabcoHReO4/PVDF	None	3.8V	7
PFD-BTO/PVDF	None	5.9V	This work

References

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