

Supporting Information

Simultaneous enhancements in the Seebeck coefficient and conductivity of PEDOT:PSS by blending with ferroelectric BaTiO₃ nanoparticles

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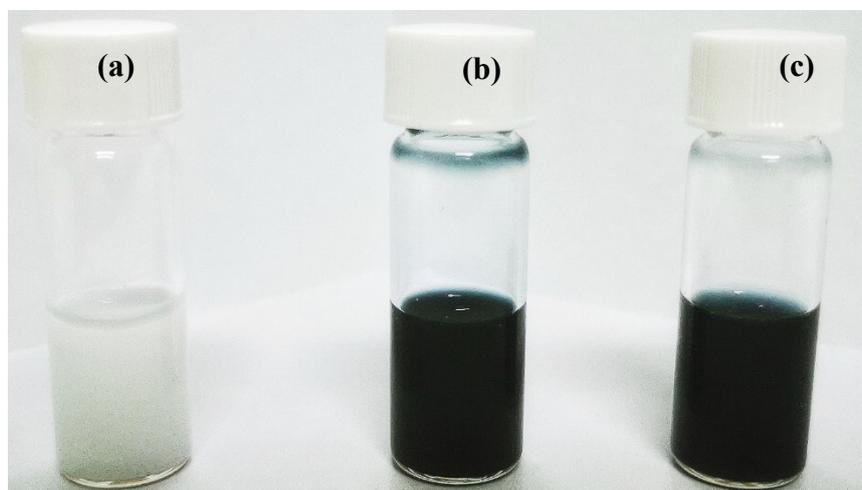


Fig. S1. Photos of aqueous dispersions of (a) BaTiO₃, (b) PEDOT:PSS and (c) PEDOT:PSS with 20 vol% of BaTiO₃.

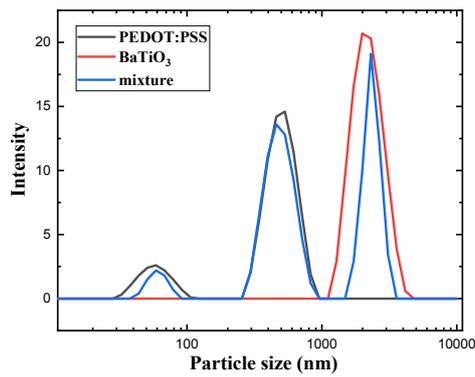


Fig. S2. Particle size distribution of PEDOT:PSS aqueous dispersion, BaTiO₃ aqueous suspension and their mixture suspension by dynamic light scattering (DLS) measurements.

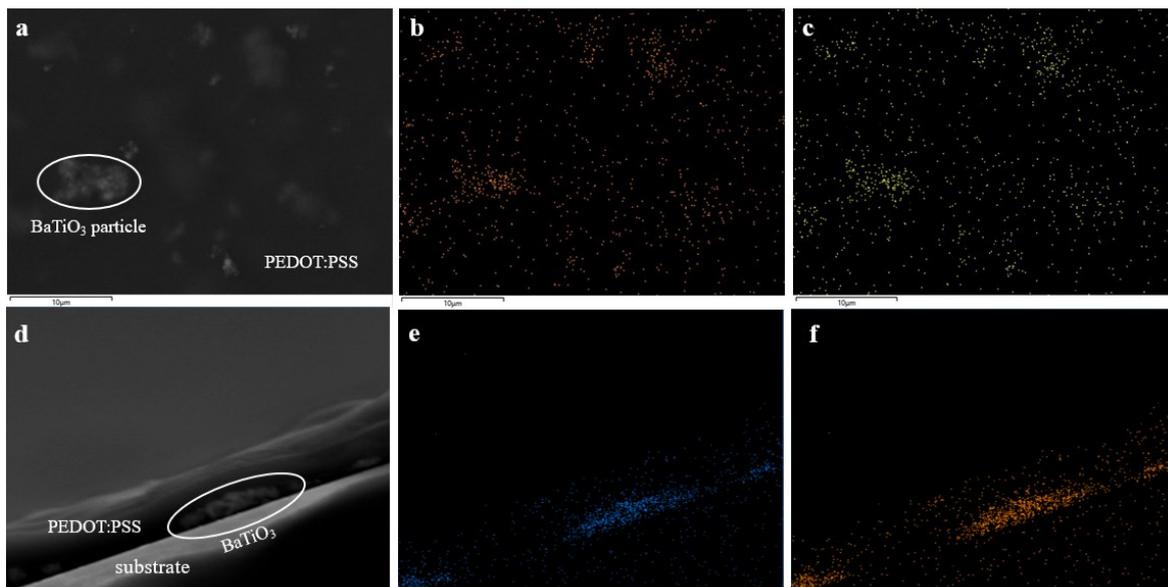


Fig. S3. (a) Surface and (d) cross-sectional SEM images of PEDOT:PSS/BaTiO₃ films with the BaTiO₃ loading of 50.0 vol.%. (b) and (c) are the corresponding surface EDS mappings of Ba and Ti. (e) and (f) are the corresponding cross-sectional EDS mappings of Ba and Ti EDS mappings.

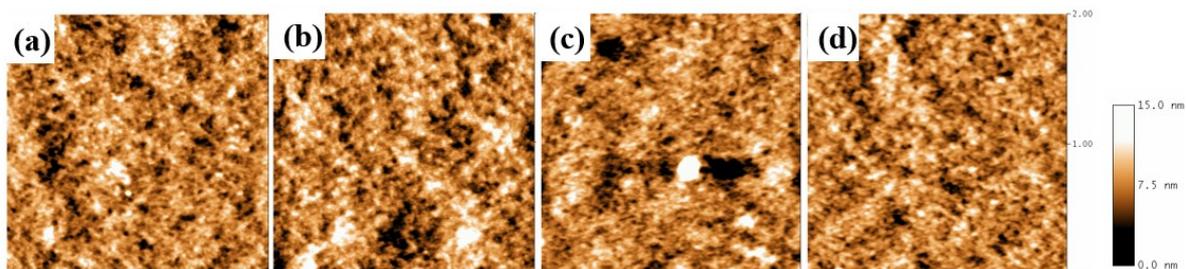


Fig. S4. Topographical AFM images of PEDOT:PSS/BaTiO₃ films with the BaTiO₃ loadings of (a) 0 vol%, (b) 20 vol%, (c) 33.3 vol%, and (d) 50 vol%. The dimension of each image is 2 $\mu\text{m} \times 2 \mu\text{m}$.

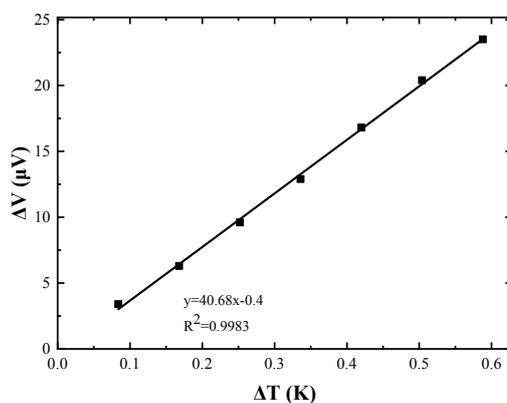


Fig. S5. The ΔV vs ΔT relationship of a PEDOT:PSS/ BaTiO₃ film with the BaTiO₃ loading of 45 vol%.

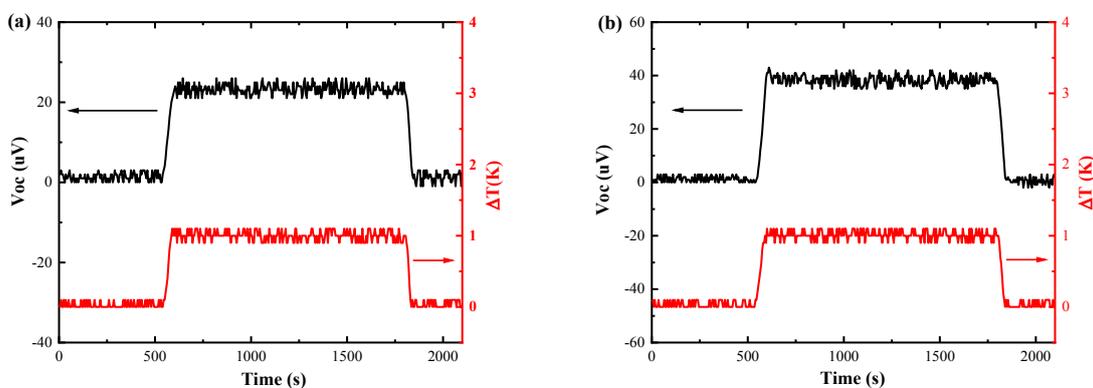


Fig. S6. A comparison of the open-circuit voltage (V_{oc}) versus the time after a temperature gradient (ΔT) of 1 K was applied. (a) A neat PEDOT:PSS and (b) PEDOT:PSS/ BaTiO₃ film with 25 vol% BaTiO₃.

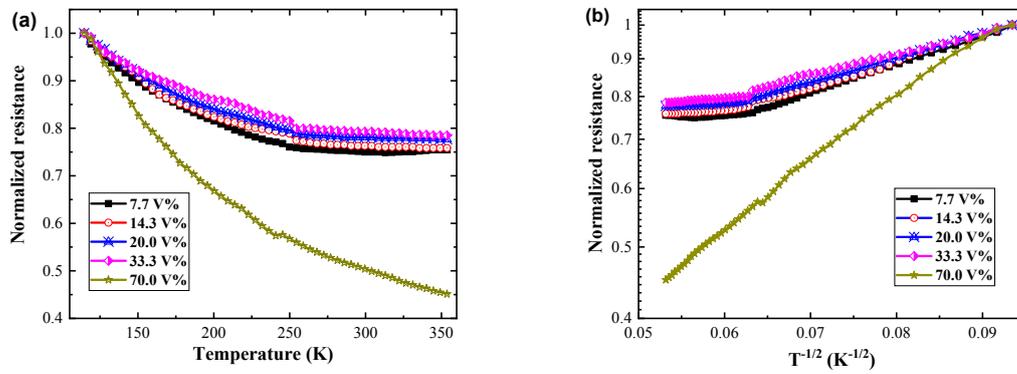


Fig. S7. (a) Temperature dependences of the resistances of a neat PEDOT:PSS film and PEDOT:PSS/BaTiO₃ composite films and (b) the analyses of the temperature dependences of the resistances with the one-dimensional VRH model. The BaTiO₃ loadings are indicated.