

Supplementary Information

The mechanism of PVDF/CsPbBr₃ perovskite composite fiber as self-polarization piezoelectric nanogenerator with ultra-high output voltage

You Xue,^a Tao Yang,^{*a} Yapeng Zheng,^a Enhui Wang,^a Hongyang Wang,^b Laipan Zhu,^c Zhentao Du,^d Xinmei Hou,^{*a} Kuo-Chih Chou^a

^a *Beijing Advanced Innovation Center for Materials Genome Engineering, Collaborative Innovation Center of Steel Technology, University of Science and Technology Beijing, Beijing 100083, China*

^b *State Key Laboratory of Environmental Criteria and Risk Assessment, Chinese Research Academy of Environmental Sciences, Beijing 100012, China*

^c *Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences, Beijing 100083, China*

^d *MOE Key Laboratory of New Processing Technology for Non-ferrous Metals and Materials, Guangxi Key Laboratory of Processing for Non-ferrous Metals and Featured Materials, Guangxi University, Nanning 530004, China*

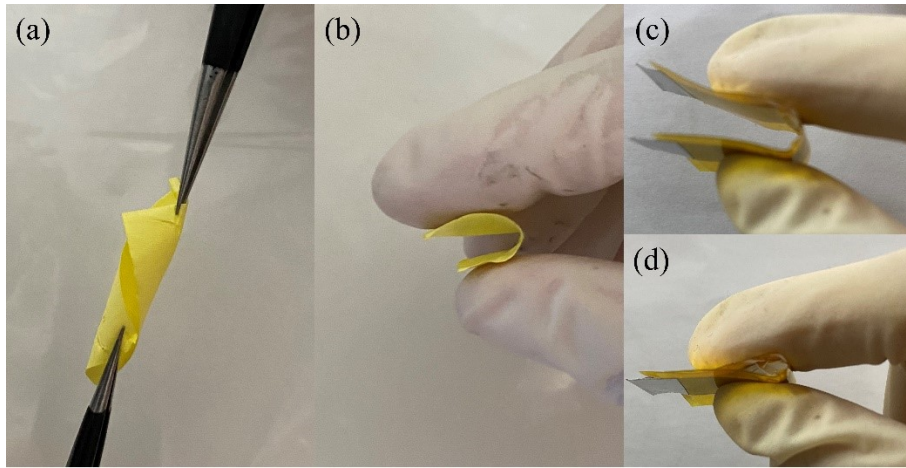


Fig. S1 Flexibility tests of films (a,b) and devices(c,d).

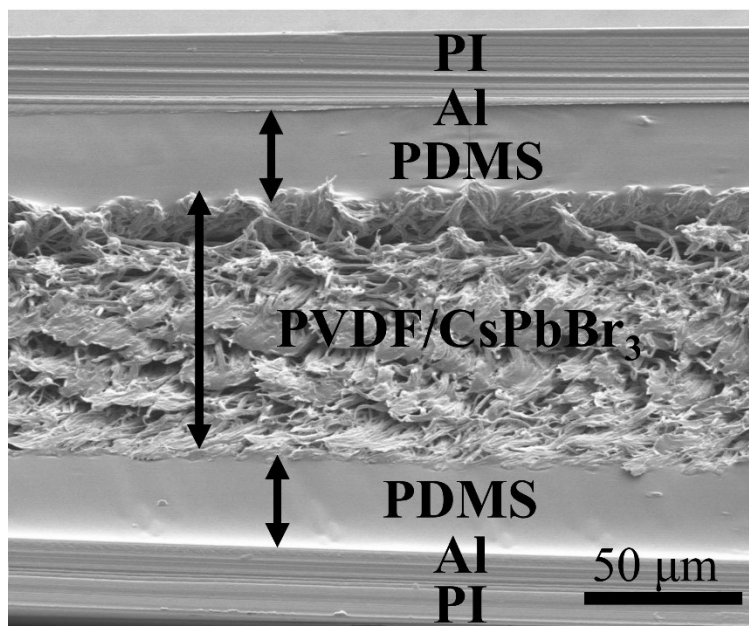


Fig. S2 The cross-section SEM image of the PVDF/CsPbBr₃-PENG.

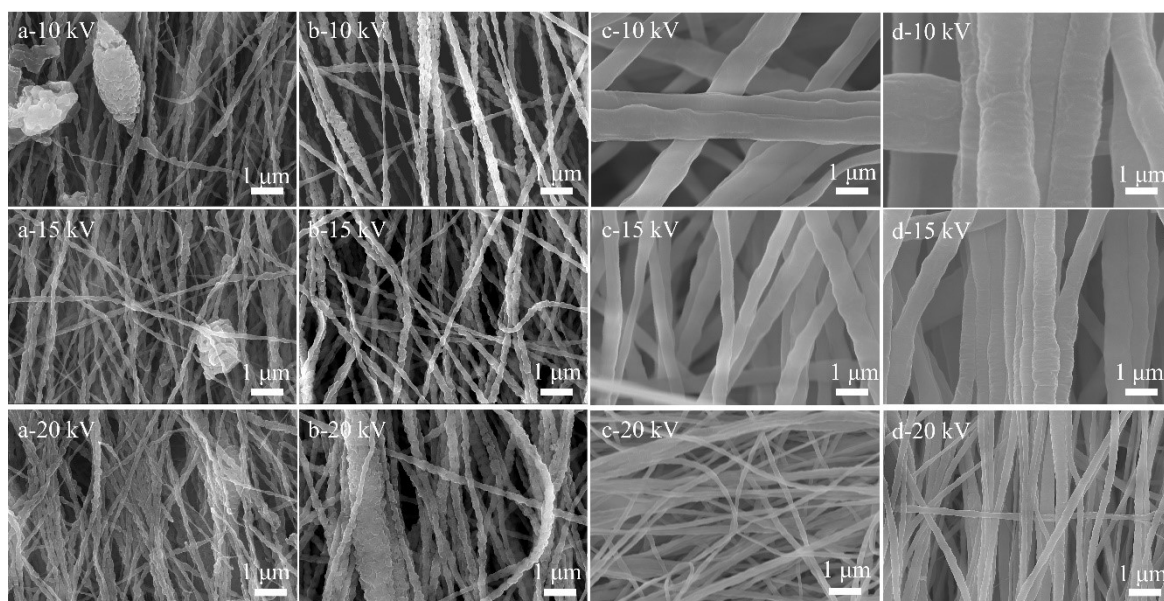


Fig. S3 Typical SEM images of PVDF fiber under different conditions. The concentration of PVDF is 10%(a), 12%(b) and 14%(c), 16%(d). 10 kV, 15 kV, and 20 kV are the voltage value for electrospinning setting.

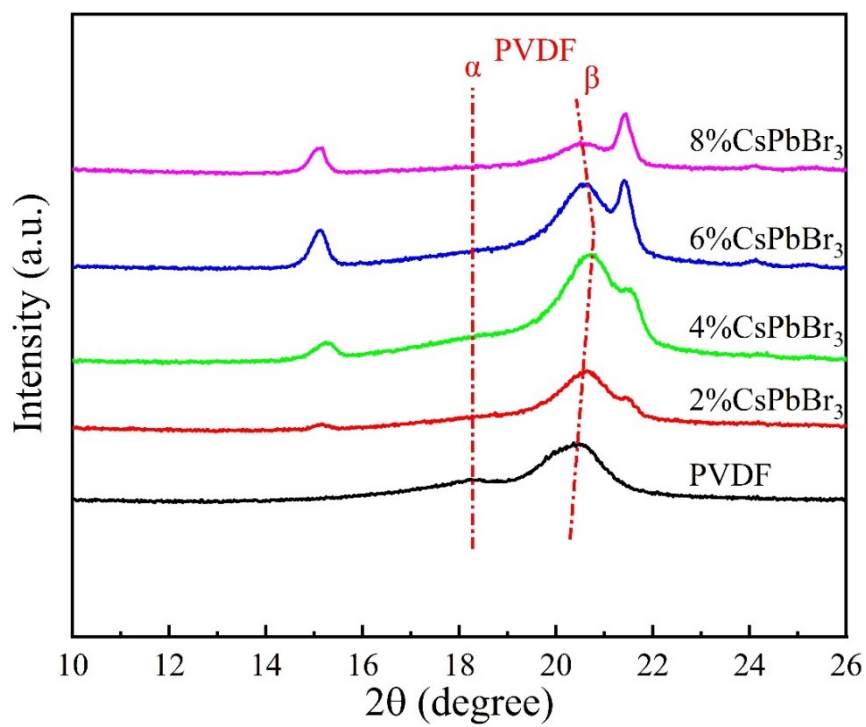


Fig. S4 Magnified view of XRD pattern.

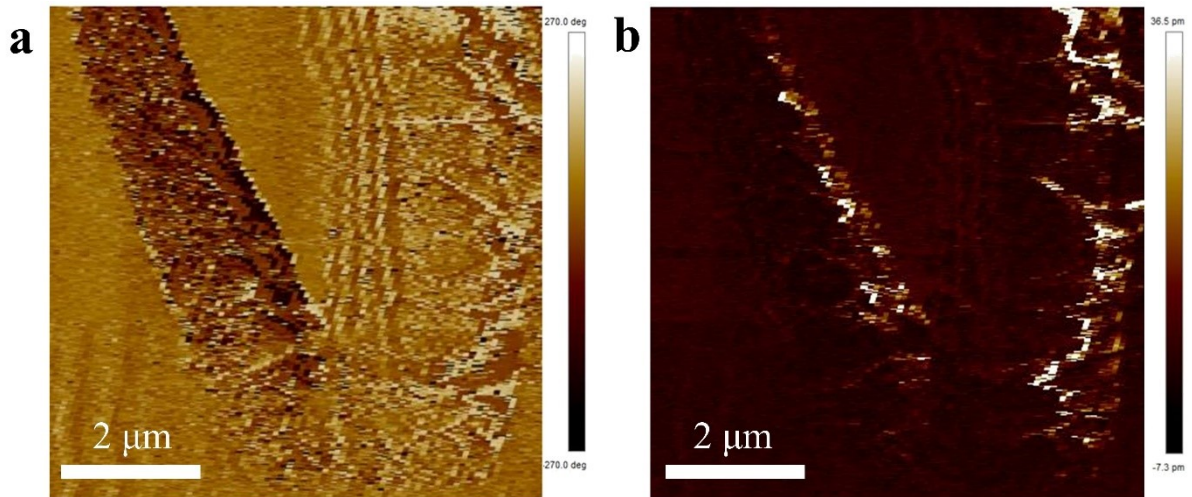


Fig. S5 PFM phase and amplitude image of PVDF/4%CsPbBr₃ fiber.

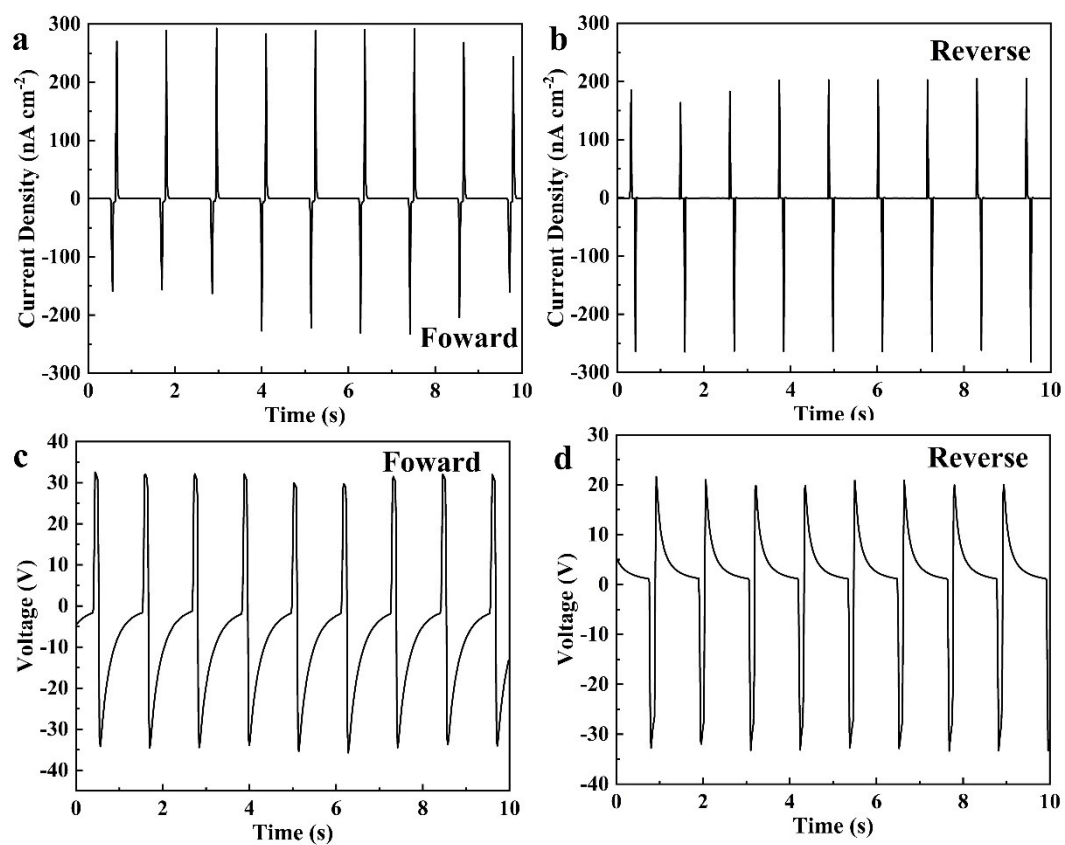


Fig. S6 Piezoelectric output density of short-circuit current (I_{sc}) of PVDF/4%CsPbBr₃ PENG under forward(a) and reverse(b) connection. Open-circuit voltage (V_{oc}) in of PVDF/4%CsPbBr₃ PENG under forward(c) and reverse(d) connection.

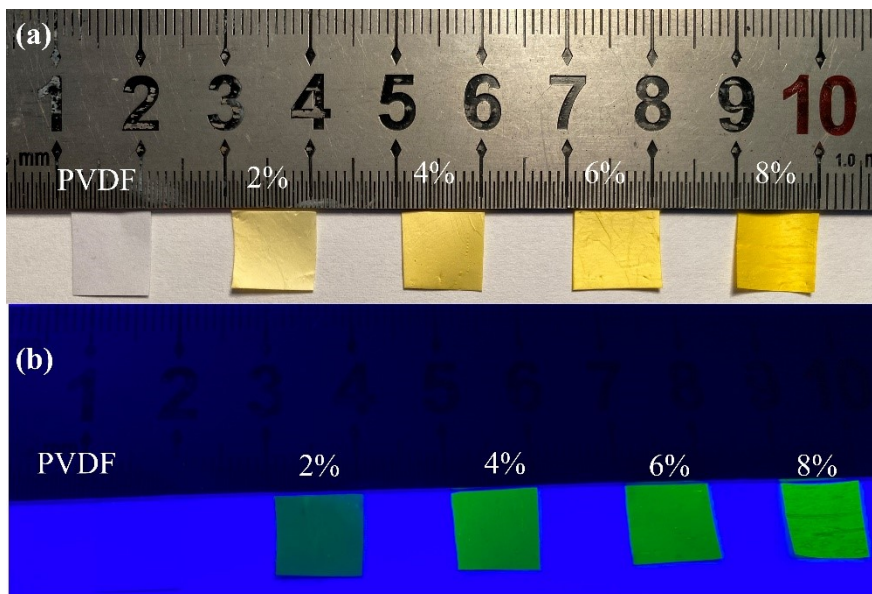


Fig. S7 Optical image display of pure PVDF and PVDF/CsPbBr₃ fiber films under normal light(a) and 365 nm UV light(b).

Table S1 The content of β phase of PVDF and composite fibers.

Samples	PVDF	PVDF - 2%CsPbBr ₃	PVDF - 4%CsPbBr ₃	PVDF - 6%CsPbBr ₃	PVDF - 8%CsPbBr ₃
Content of β phase [%]	78.7	94.3	94.6	94.5	94.3