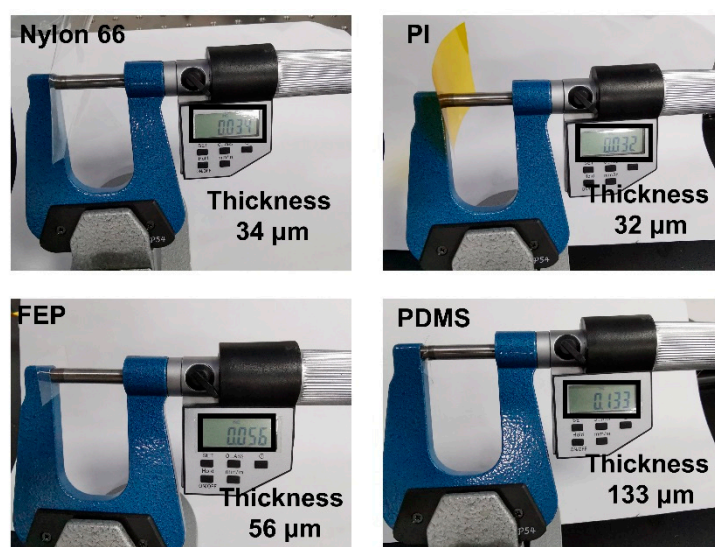


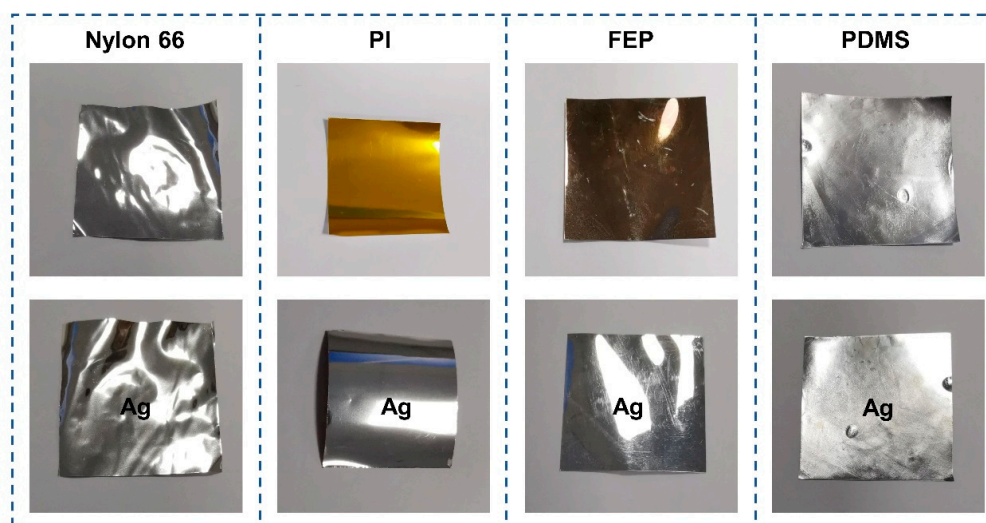
**Supplementary Note S1:** The detailed procedures for TENG examination.

The detailed motion parameters controlled by a linear motor are as follows. The used positive triboelectric layer is PET, and the area of TENG is  $2 \times 2 \text{ cm}^2$ . The contact-separation distance is 10 mm, the acceleration of the movement is  $1000 \text{ mm/s}^2$ , and the wait time of contact is 0.1s.

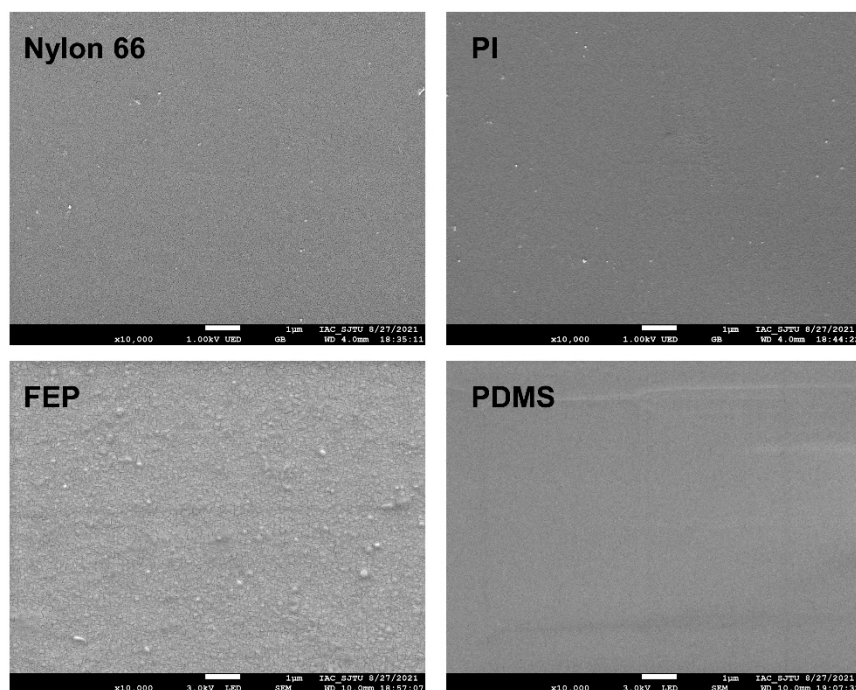
**Supplementary Figures:**



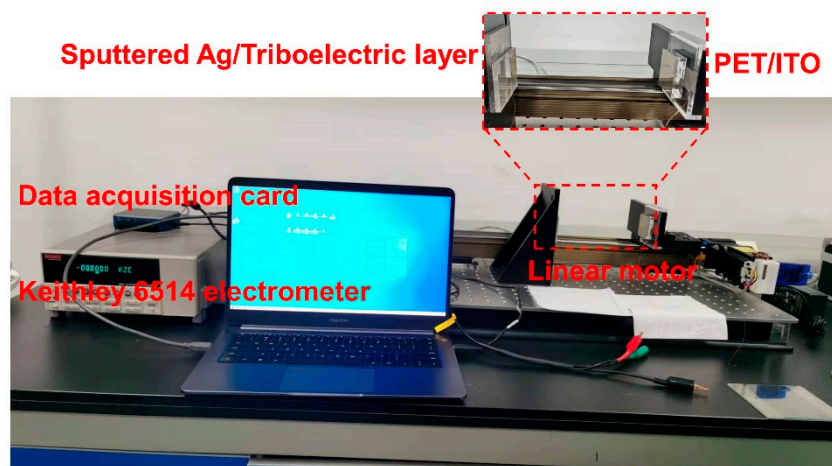
**Figure S1.** The thickness of the polymer films (nylon 66, PI, FEP, and PDMS) used in this work.



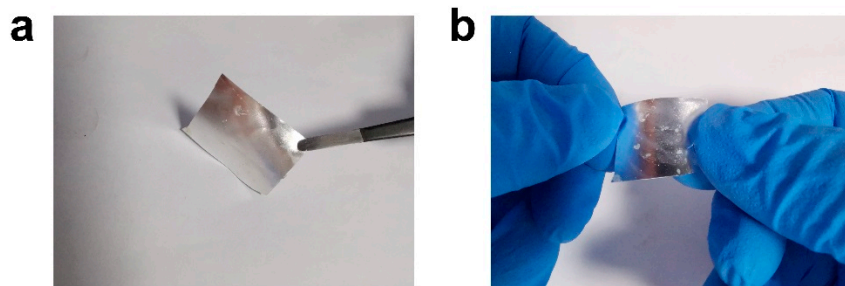
**Figure S2.** The optical images of the polymer films after Ag sputtering.



**Figure S3.** The SEM images of the polymer films (nylon 66, PI, FEP, and PDMS) at  $\times 10$  K magnification.



**Figure S4.** The testing system, including a Keithley 6514 electrometer, data acquisition card, linear motor, and TENG.



**Figure S5.** The optical images of the sputtered Ag after severe deformation.