Supplementary Materials

α-Fe_2O_3 Nanoparticles Aided-Dual Conversion for Self-Powered Bio-based Photodetector

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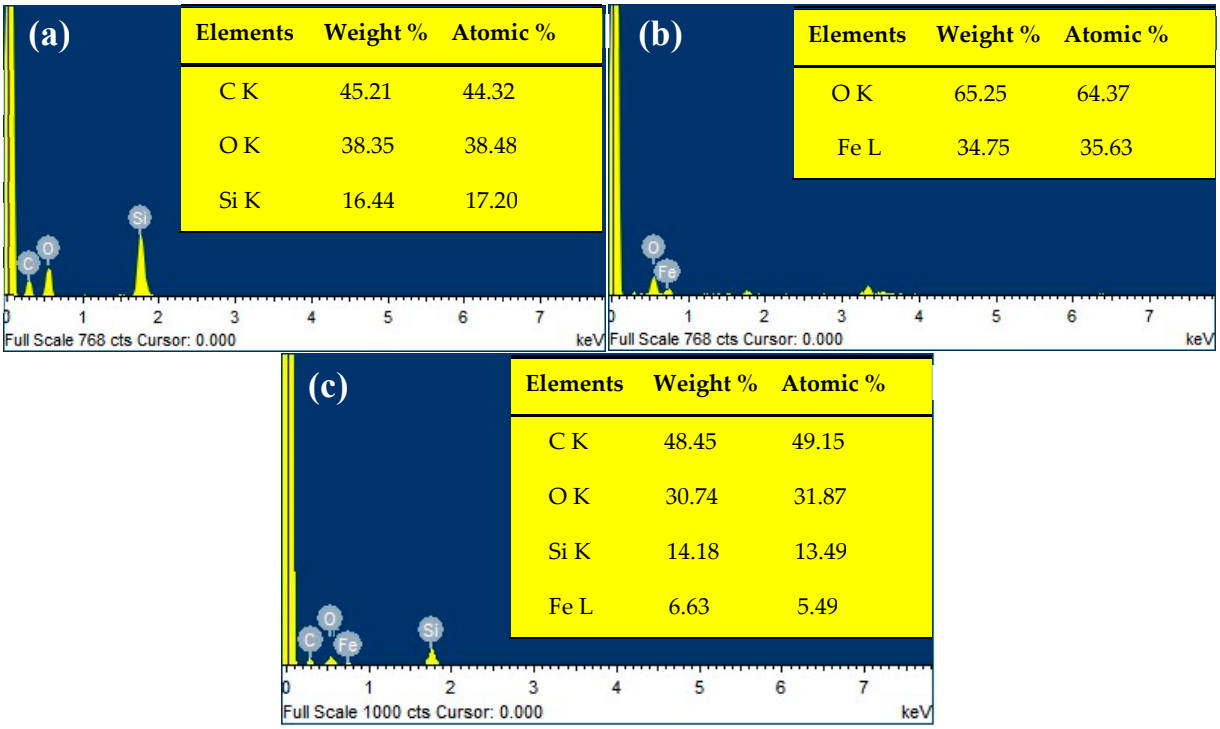


Figure S1. EDS analysis results of the (a) PDMS film (b) α-Fe_2O_3 nanoparticles and (c) PDMS/α-Fe_2O_3 nanocomposite film.

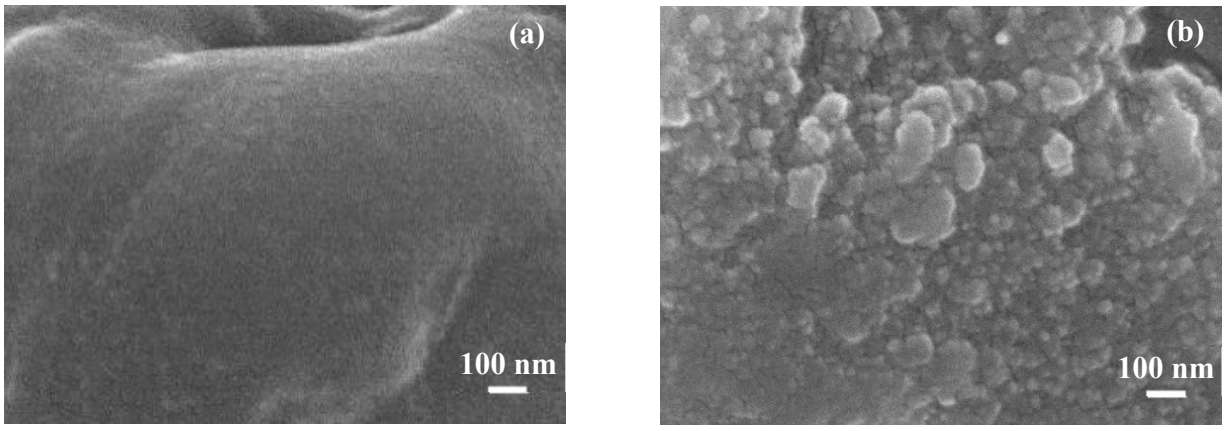
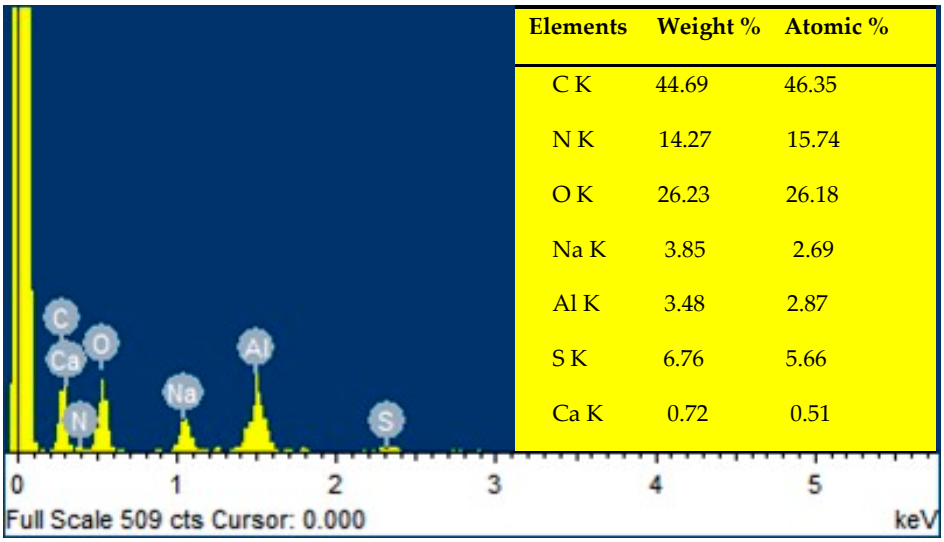


Figure S2. FESEM images of the (a) PDMS film and (b) PDMS/α-Fe_2O_3 nanocomposite film.

(a)



Elements	Weight %	Atomic %
C K	44.69	46.35
N K	14.27	15.74
O K	26.23	26.18
Na K	3.85	2.69
Al K	3.48	2.87
S K	6.76	5.66
Ca K	0.72	0.51

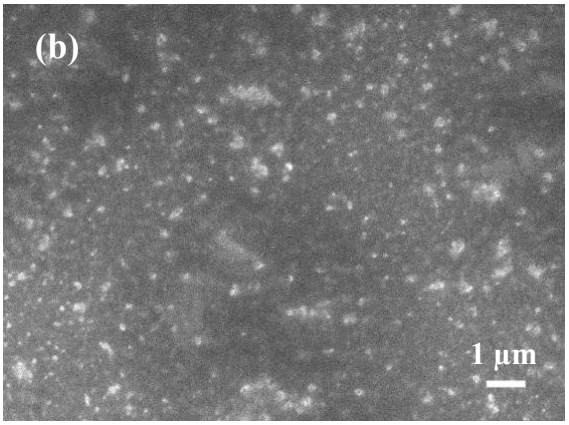


Figure S3. (a) Results of the EDS analysis for processed hair film. (b) FESEM image of the processed hair film.

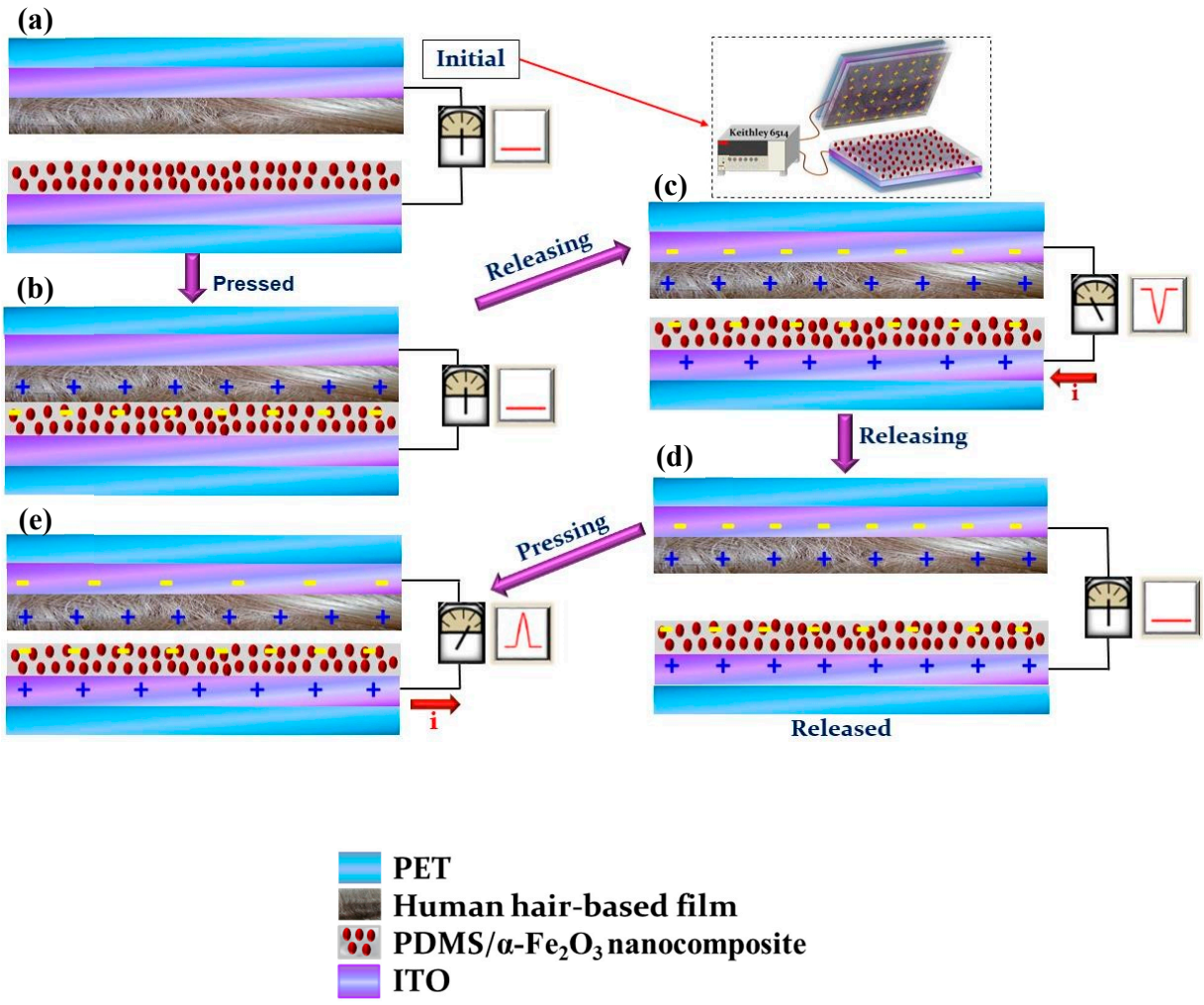


Figure S4. Working mechanism of the TENG consist of PDMS/α-Fe_2O_3 nanocomposite film (as the negative tribo-layer) and human hair (as the positive tribo-layer) under dark state: (a) Initial stage of operation of the TENG (b) The first contact state without any output signal arises (c) On releasing state, a negative electrical output signal arose (d) After the friction layers get completely released, the output signal drops to zero (e) On subsequent pressing, a positive electrical signal is produced.