

Supplementary Information

Semiconducting polymer contributes favorably to the Seebeck coefficient in multi-component, high-performance n-type thermoelectric nanocomposites

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Results

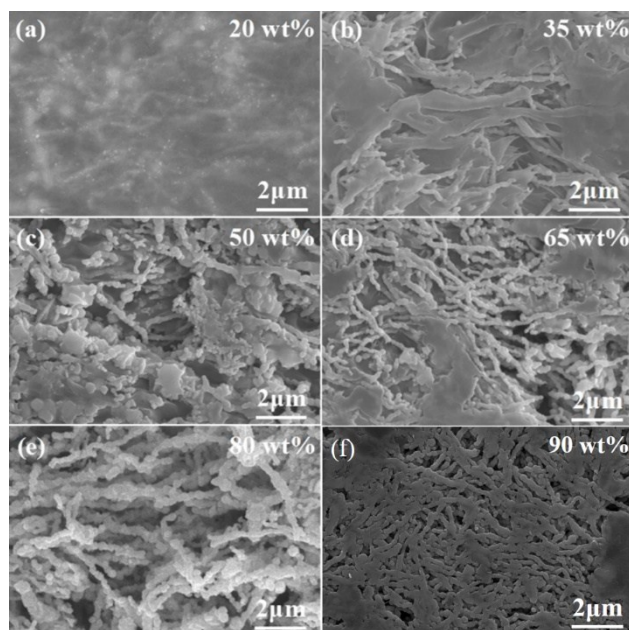


Fig. S1. Top-view FE-SEM images of magnetically aligned Co NWs/N2200 TENCs with various Co NWs contents.

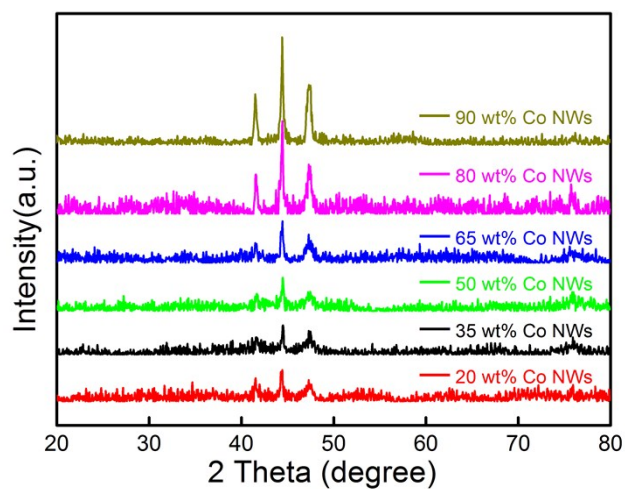


Fig. S2. XRD patterns of magnetically aligned Co NWs/N2200 TENCs.

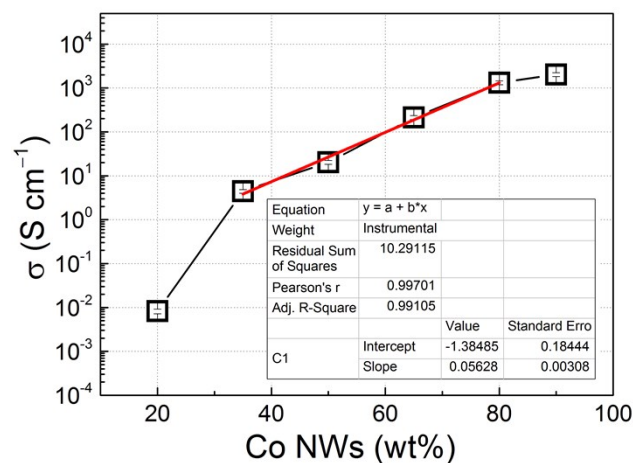


Fig. S3. The electrical conductivity of Co NWs/N2200 TENCs as a function of the Co NWs content at room temperature. The red line is the linear fitting curve between Co NWs content of 35 and 80 wt%.

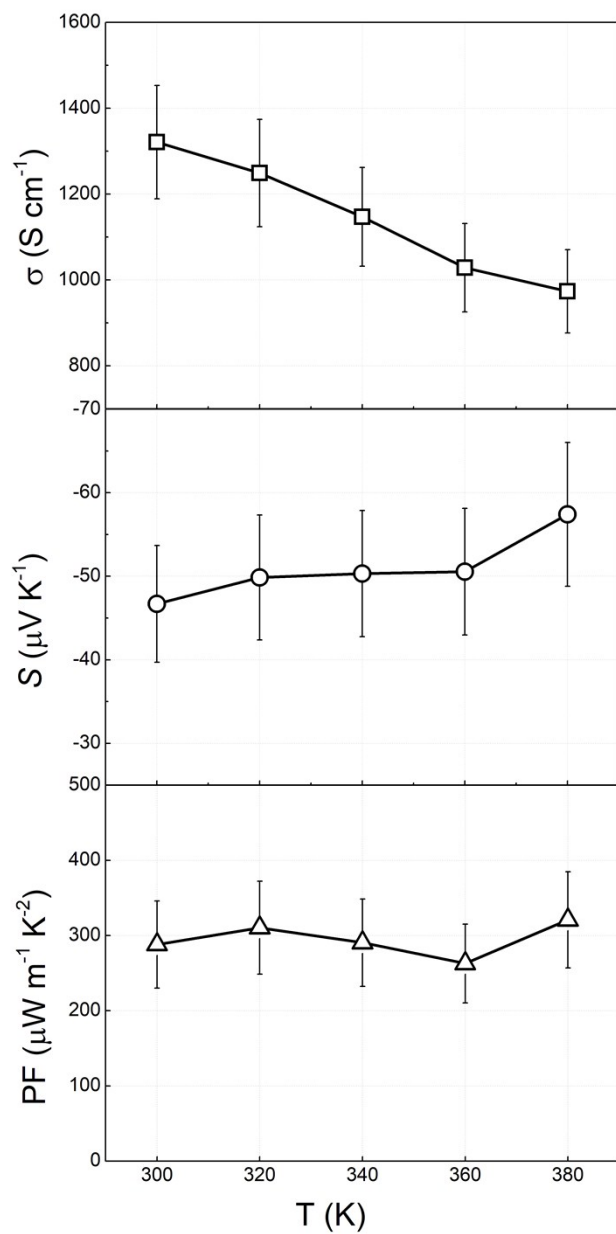


Fig. S4. Temperature dependences of average TE properties of the optimal Co NWs (80 wt%)/N2200 TENCs.

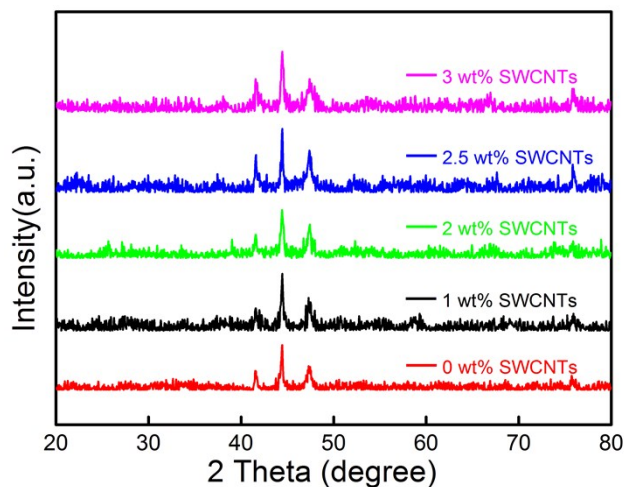


Fig. S5. XRD patterns of Co NWs/N2200/SWCNTs TENCs with different portions of SWCNT when the Co NWs:N2200 ratio is 4:1 wt%.

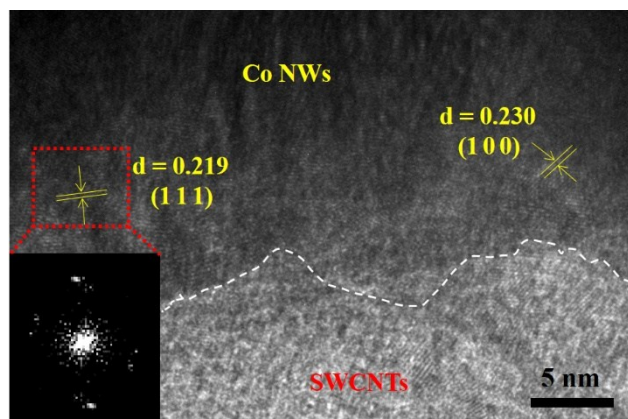


Fig. S6. HR-TEM image of ternary TENC with 2 wt% SWCNTs. The inset shows fast Fourier transform (FFT) analysis of the red dotted box area.

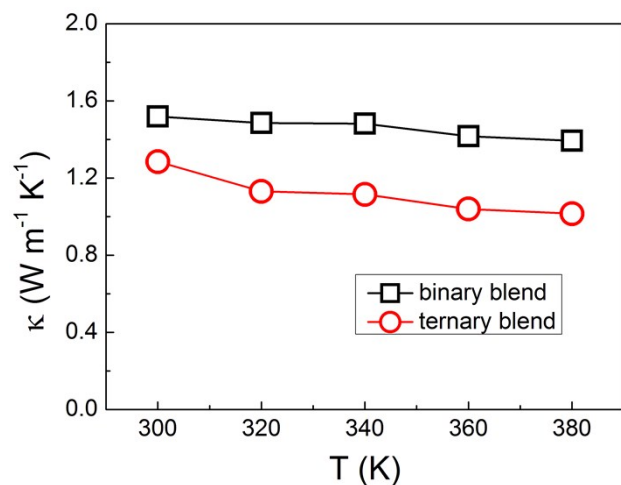


Fig. S7. Temperature dependences of average thermal conductivity of the optimal Co NWs/N2200 binary TENCs and Co NWs/N2200/SWCNTs ternary TENCs.

Table S1. The TE properties of TBAB-doped n-type SWCNTs

w(TBAB):w(SWCNTs)	S ($\mu\text{V K}^{-1}$)	σ (S cm^{-1})	PF ($\mu\text{W m}^{-1} \text{K}^{-2}$)
10:3	-42.6	349.2	63.4
10:5	-46.7	662.9	144.6
10:7	-40.9	477.9	79.9
10:10	-40.5	549.3	90.1
10:20	-40.2	561.5	90.7

Table S2. Comparison of zTs versus temperature for Co NWs/N2200/SWCNTs and Co NWs/PVDF TENCs

Sample	300 K	320 K	340 K	360 K	380 K
Co NWs/PVDF	0.053	0.066	0.063	0.061	0.068
Co NWs/N2200/SWCNTs	0.086	0.105	0.129	0.154	0.181