Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Electronic Supplementary Information

Engineering the carrier scattering at the interfaces in polyaniline based nanocomposites for high thermoelectric performance

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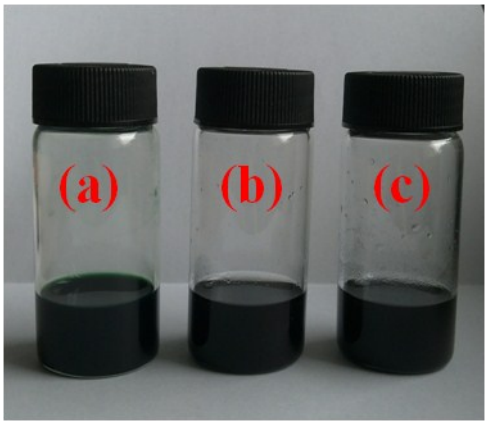

Fig. S1 Digital photograph of synthesized samples placed after a week: (a) 10 mg mL^{-1} solution of PANI, (b) 10 mg mL^{-1} solution of PANI/SWNTs, and (c) 10 mg mL^{-1} solution of PANI/SWNTs/Te. All samples show good water-solubility.

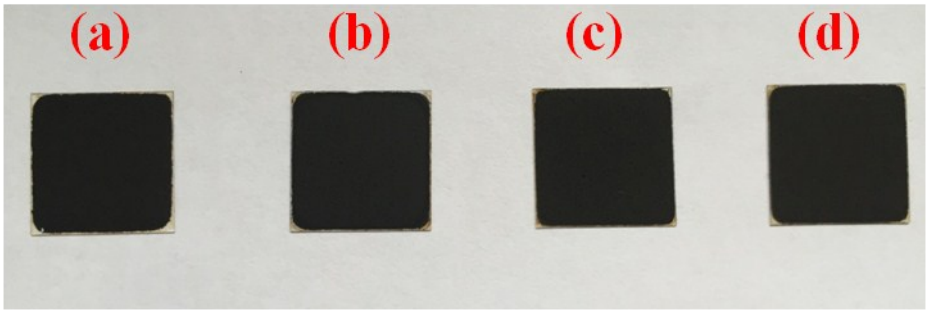

Fig. S2 Digital photograph of prepared PANI/SWNTs/Te nanocomposite films with (a) 4 wt% Te content, (b) 10 wt% Te content, (c) 30 wt% Te content, and (d) 50 wt% Te content.

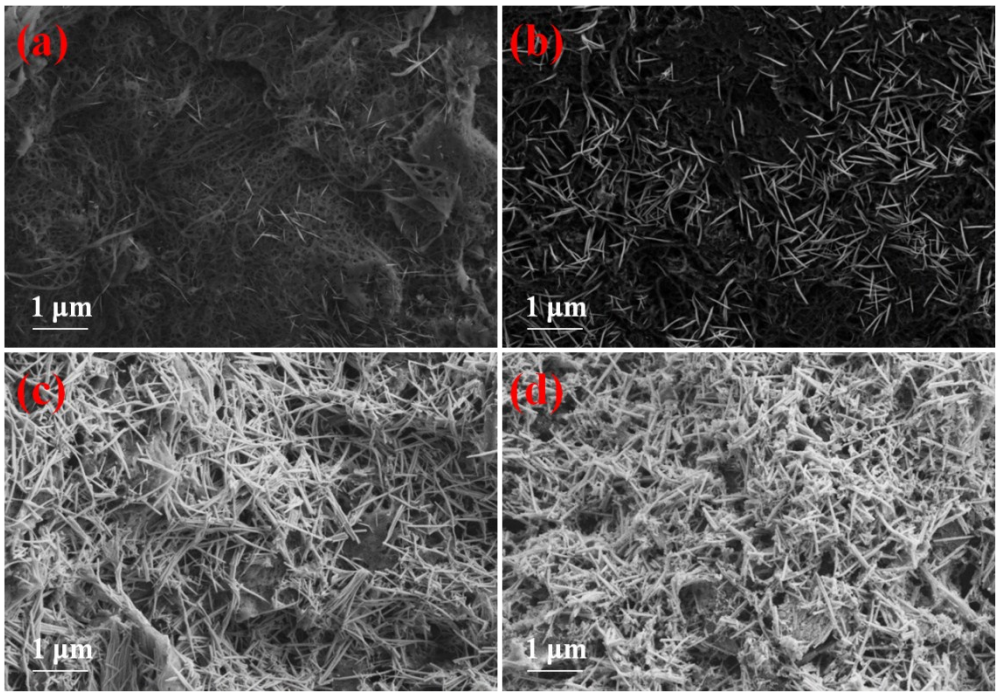

Fig. S3 SEM images of (a) PANI/SWNTs/Te nanocomposite film with 4 wt% Te content, (b) PANI/SWNTs/Te nanocomposite film with 10 wt% Te content, (c) PANI/SWNTs/Te nanocomposite film with 30 wt% Te content, and (d) PANI/SWNTs/Te nanocomposite film with 50 wt% Te content.

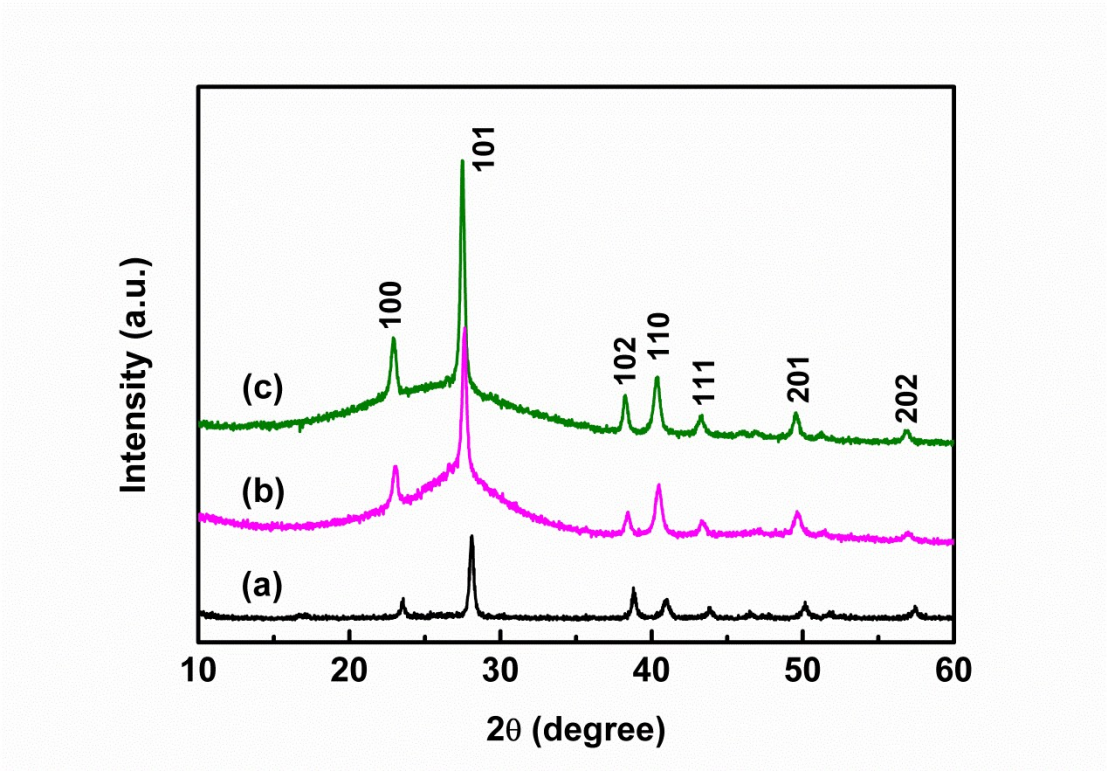

Fig. S4 XRD patterns of (a) PANI/SWNTs/Te nanocomposite film with 10 wt% Te content, (b) PANI/SWNTs/Te nanocomposite film with 30 wt% Te content, (c) PANI/SWNTs/Te nanocomposite film with 50 wt% Te content.

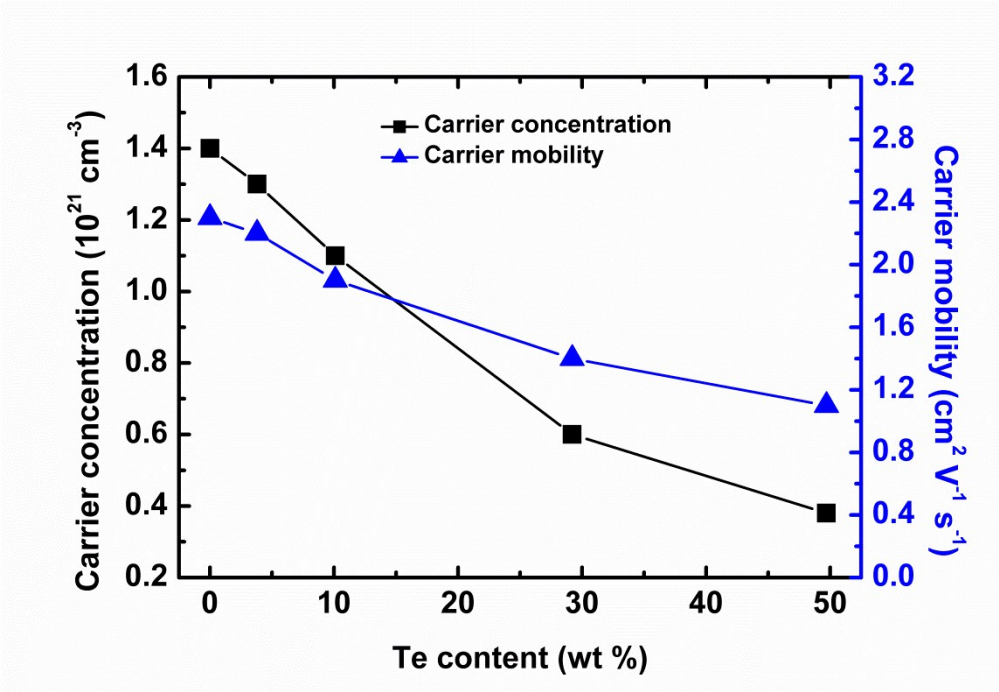

Fig. S5 Carrier concentration and carrier mobility of PANI/SWNTs/Te nanocomposite films with different Te content.

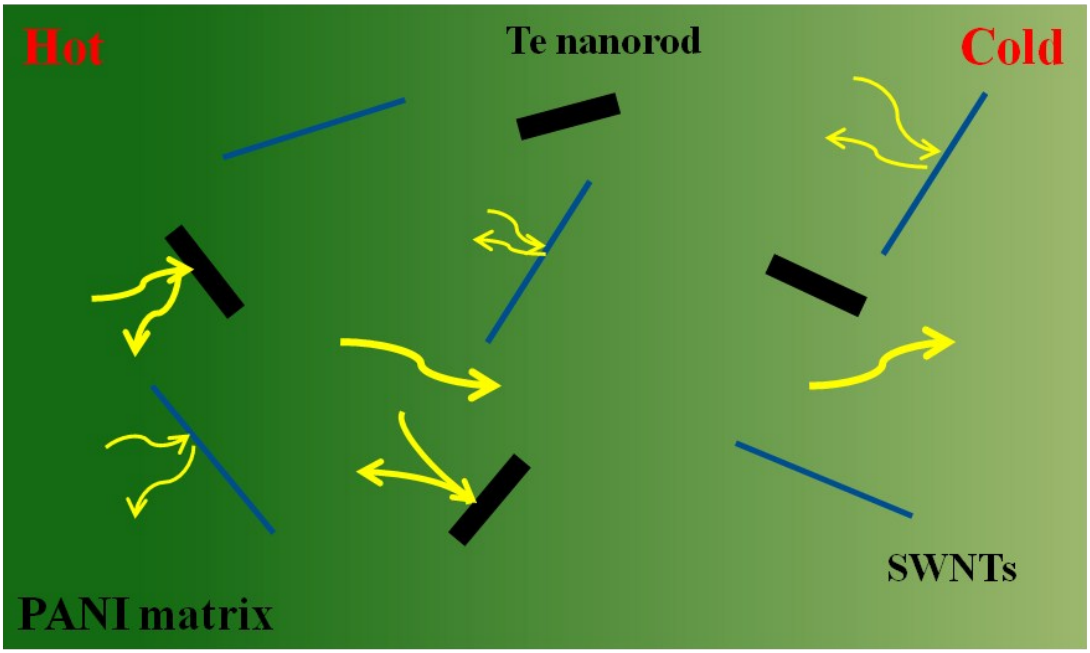

Fig. S6 Schematic diagram of the phonon scattering effect in PANI/SWNTs/Te nanocomposites.

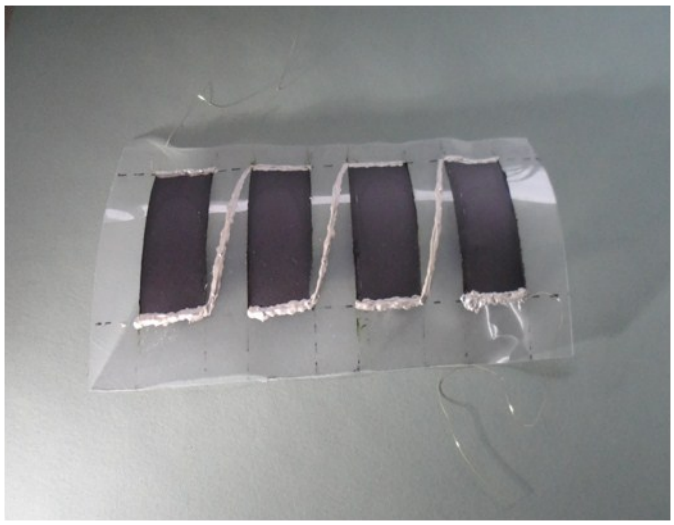

Fig. S7 Digital photograph of flexible thermoelectric module fabricated by PANI/SWNTs/Te nanocomposite films with 10 wt% Te content.