

**Electronic Supplementary Information:**

**Effect of polymer nanolayer in tin-chalcogenide nanosheet/conductive  
polymer flexible composite films and their enhanced thermoelectric  
performance**

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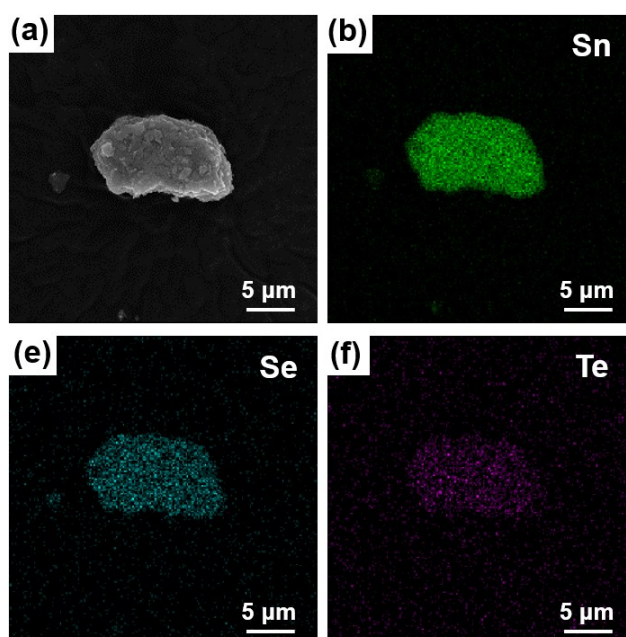
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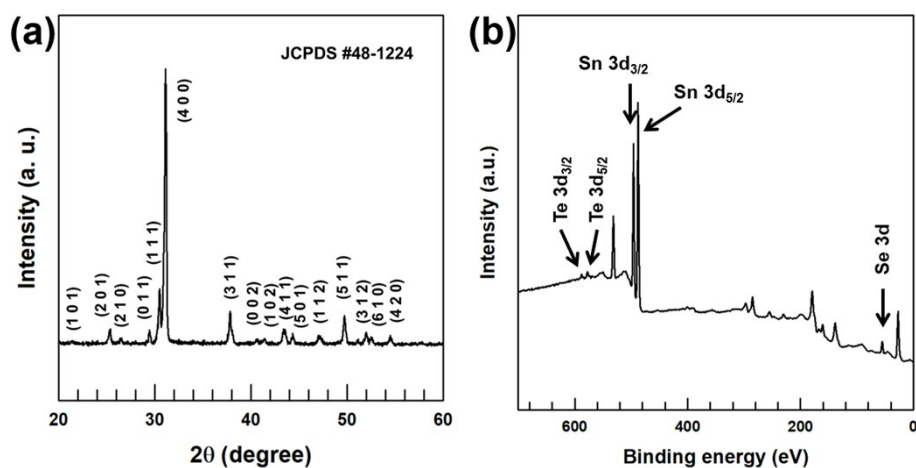
Supporting Information Contents:

1. Figures
2. Tables

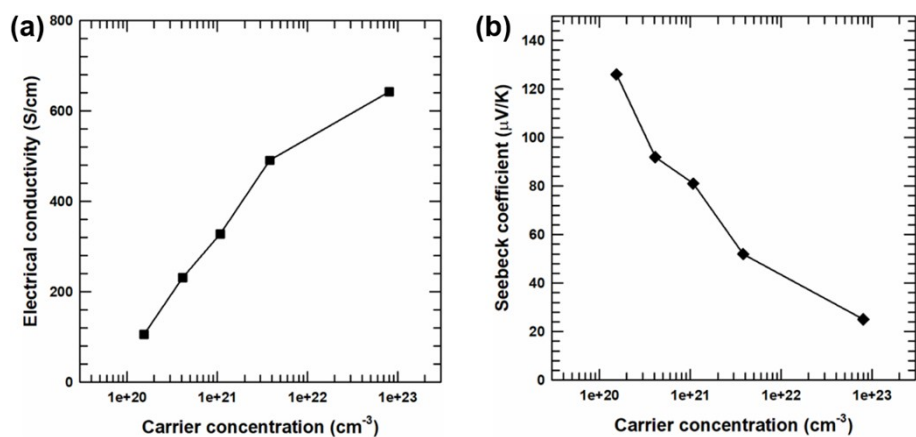
## 1. Figures



**Fig. S1** FE-SEM image and the corresponding EDS elemental mappings of  $\text{SnSe}_{0.97}\text{Te}_{0.03}$  powder.



**Fig. S2** (a) XRD result of the SnSe nanosheets (JCPDS # 48-1224) and (b) XPS wide-scan spectrum of the  $\text{SnSe}_{0.97}\text{Te}_{0.03}$  nanosheets.



**Fig. S3** (a) Electrical conductivity and (b) Seebeck coefficient values of the PEDOT-coated  $\text{SnSe}_{0.97}\text{Te}_{0.03}$  nanosheet-x/PEDOT:PSS composites as a function of the carrier concentration.

## 2. Tables

	$\sigma$ (S/cm)	$S$ ( $\mu$ V/K)	$\kappa$ (W/m·K)	$S^2 \cdot \sigma$ (mW/m·K <sup>2</sup> )	$ZT$
SnSe <sub>0.97</sub> Te <sub>0.03</sub> nanosheets	15.7	285	0.68	127.5	$5.87 \times 10^{-2}$
SnSe <sub>0.97</sub> Te <sub>0.03</sub> powder	17.1	268	0.75	122.8	$5.13 \times 10^{-2}$

**Table S1** Measured and calculated thermoelectric properties for the SnSe<sub>0.97</sub>Te<sub>0.03</sub> nanosheets and SnSe<sub>0.97</sub>Te<sub>0.03</sub> powder. All the listed numbers are average values.

Filler content	$n$	$\mu$
(wt.%)	(cm <sup>-3</sup> )	(cm <sup>2</sup> /V·s)
0	8.03×10 <sup>22</sup>	0.05
10	3.83×10 <sup>21</sup>	0.8
20	1.08×10 <sup>21</sup>	1.9
30	4.12×10 <sup>20</sup>	3.5
50	1.54×10 <sup>20</sup>	4.3

**Table S2** Carrier concentration and mobility values of PEDOT-coated SnSe<sub>0.97</sub>Te<sub>0.03</sub> nanosheet-x/PEDOT:PSS composites with different content of PEDOT-coated SnSe<sub>0.97</sub>Te<sub>0.03</sub> nanosheet.