
Electronic Supplementary Information

Realizing high thermoelectric performance in Te nanocomposite through Sb₂Te₃ incorporating

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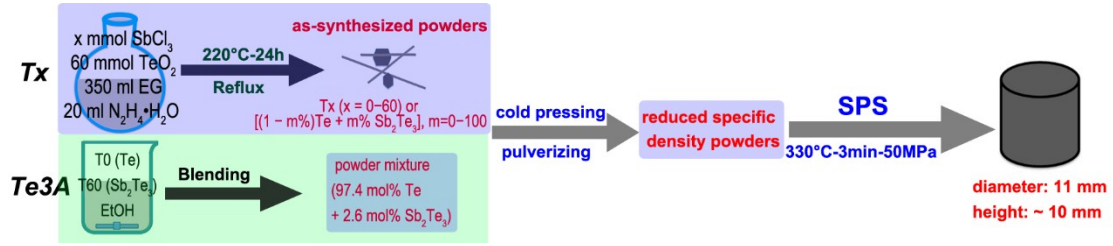


Fig. S1 The flow chart of experimental procedures.

Table S1 Density d , Sb_2Te_3 Mole Fraction m , Carrier Concentration p , and Carrier Mobility μ of Samples Tx

Sample Tx	d (g cm^{-3})	m (mol%)	p (cm^{-3})	μ ($\text{cm}^2 \text{V}^{-1} \text{s}^{-1}$)
$T0$ (Te)	6.16	0	2.2×10^{17}	404
$T1$	6.13	0.8	1.7×10^{18}	150
$T3$	6.16	2.6	1.8×10^{19}	30
$T3A$	5.92	2.6	1.6×10^{19}	138
$T5$	6.20	4.5	2.0×10^{19}	62
$T30$	6.25	50.0	4.0×10^{19}	101
$T60$	6.30	100.0	8.5×10^{19}	83
(Sb_2Te_3)				

1. Chemical composition determination.

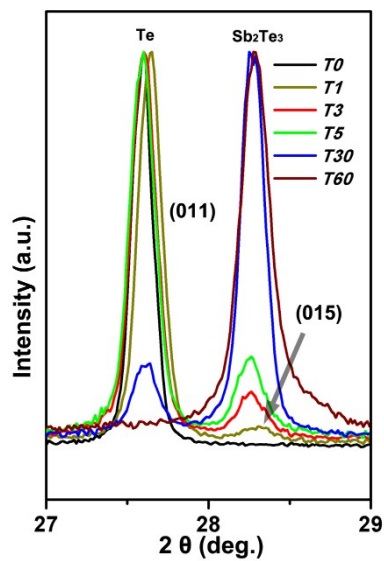


Fig. S2 The magnified XRD patterns of samples T_x in the 2-theta range of 27–29°.

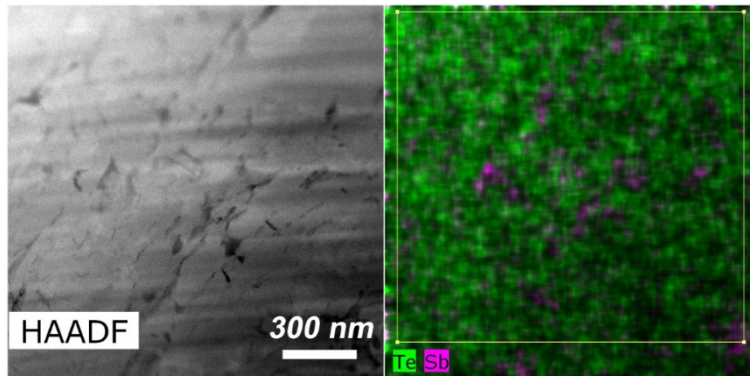


Fig. S3 HAADF-STEM image (left) and EDX elements mapping of the sintered sample $T3$.

Table S2. Chemical Composition of Sintered Sample $T3$

Element	series	orm. wt. %	orm. at. %	3 Sigma
Antimony	L-series	4.86	5.08	1.61

Tellurium

L-series

95.14

94.92

28.70

2. Anisotropy of thermoelectric properties.

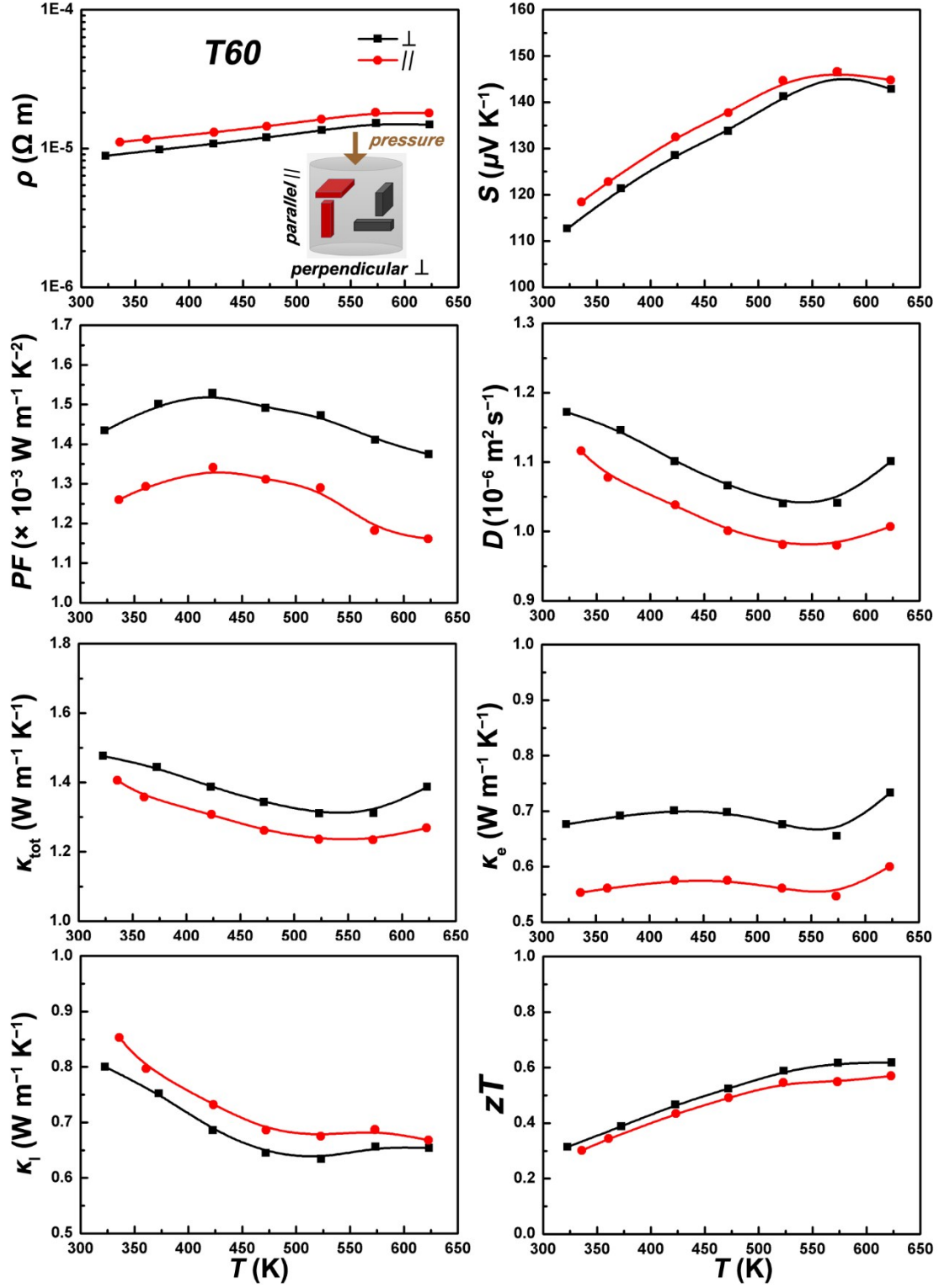


Fig. S4 Thermoelectric properties of sample *T60* (Sb_2Te_3) along different directions: perpendicular and parallel to the pressure direction.

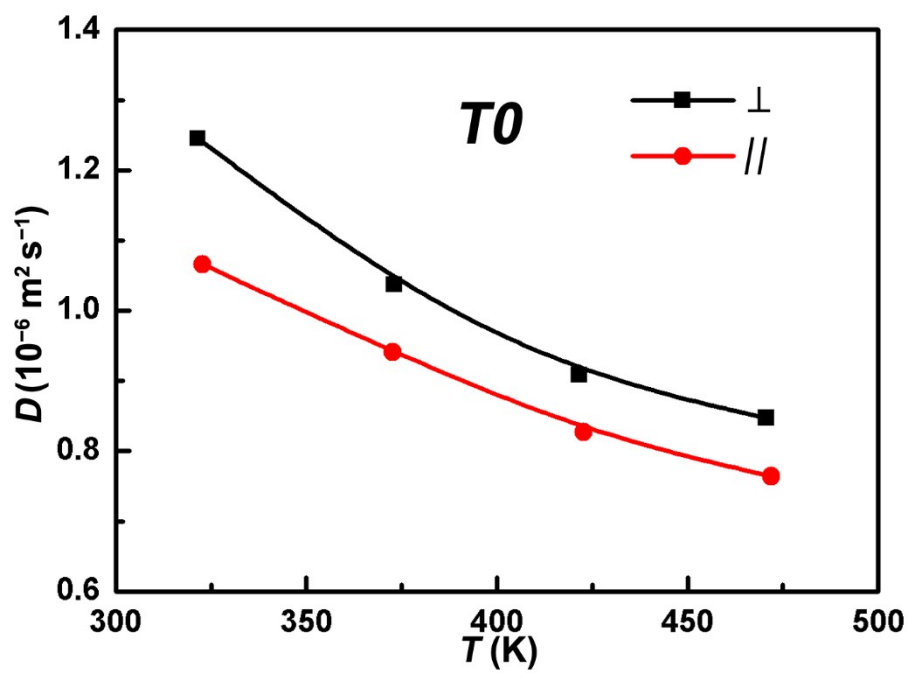


Fig. S5 Temperature-dependent thermal diffusivity of sample $T0$.

3. Repeatability of thermoelectric properties.

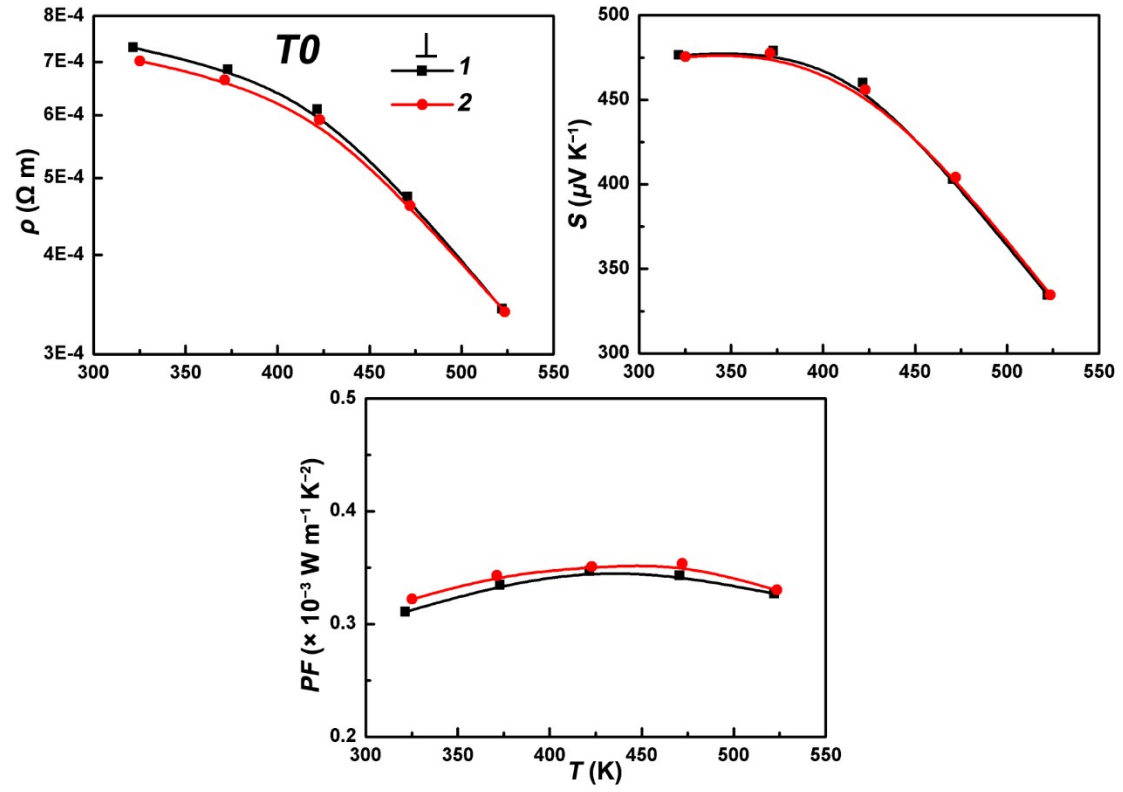


Fig. S6 Temperature-dependent electrical properties of two cuboids cut from bulk sample *T0*.

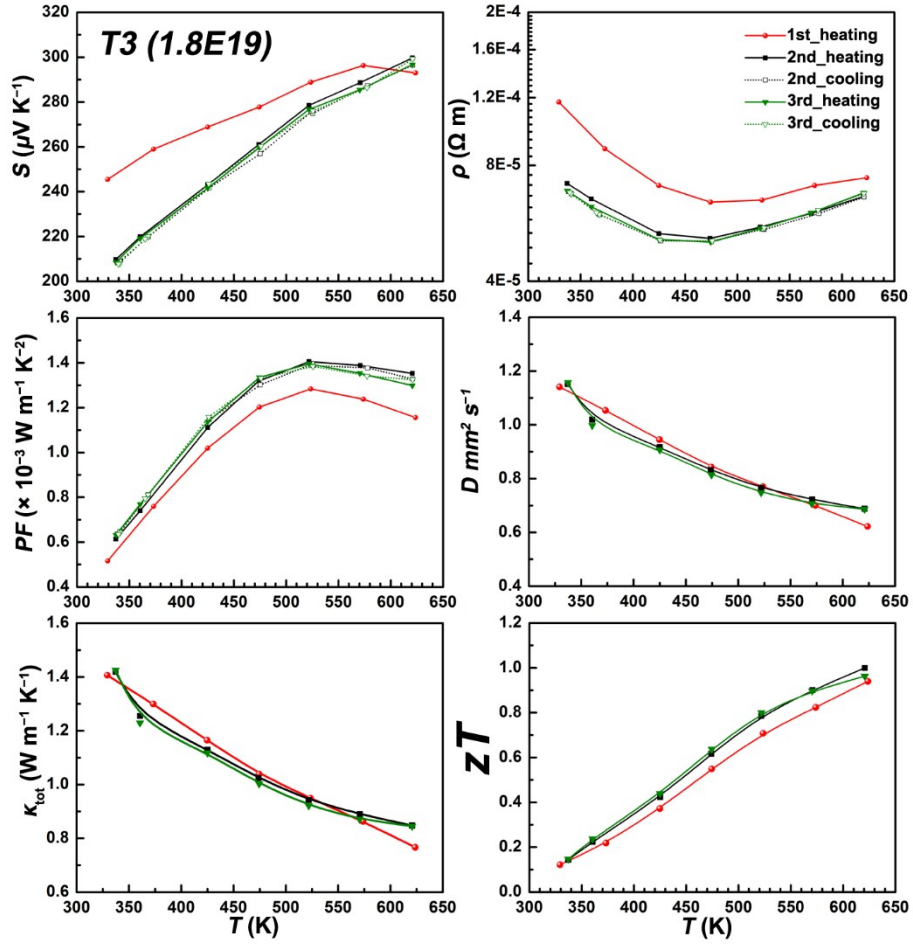


Fig. S7 The stability of thermoelectric properties for sample *T3*.