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Supplementary Information

Highly Stretchable Thermoelectric Generator Integrated from Polyaniline-based Nanocomposites for Body Heat Harvesting

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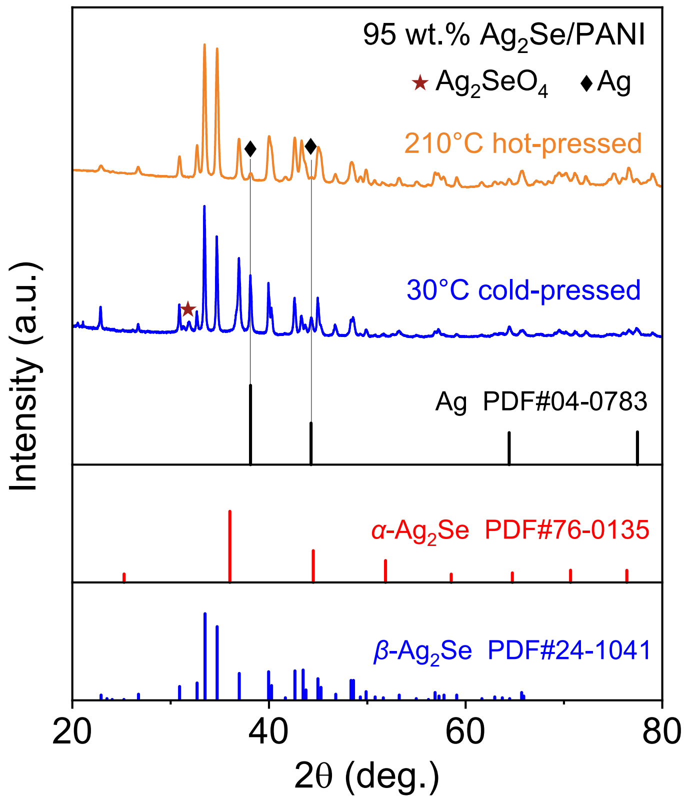

Figure S1. XRD patterns of 95 wt.% Ag_2Se/PANI samples cold-pressed at 30 °C and hot-pressed at 210 °C measured at room temperature with standard PDF cards of Ag, α-Ag_2Se and β-Ag_2Se for comparison.

Table S1. Comparison on thermoelectric properties of Ag_2Se, Te and Bi_2Te_3-based alloys

Materials	S (μV K^{-1})	PF (mW m^{-1} K^{-2})	κ (W m^{-1} K^{-2})	zT @RT	zT_{max}	Ref.
n-type $Bi_2Te_{2.7}Se_{0.3}$	-174	1.82	1.16	0.55	0.69 (373 K)	[S1]
p-type $Bi_{0.4}Sb_{1.6}Te_3$	224	4.09	1.07	1.05	1.12 (373 K)	
Ag_2Se	-121	2.23	1.14	0.66	0.68 (350 K)	[S2]
Te	120	0.12	1.96	0.11	0.8 (600 K)	[S3]

Table S2. Electrical transport properties of *n*- and *p*-type PANI-based hybrid materials obtained from Hall effect measurement and ZEM-3.

Materials	μ_H (cm^2 V^{-1} s^{-1})	n (10^{19} cm^{-3})	R_H (m^3 C^{-1})	ρ (Ω·m)	σ (S cm^{-1})
n-95 wt.% Ag_2Se/PANI	809.1	1.04	6.02×10^{-7}	7.44×10^{-6}	1344.09
p-80 wt.% Te/PANI	9.3	1.14	5.47×10^{-7}	5.87×10^{-4}	17.04

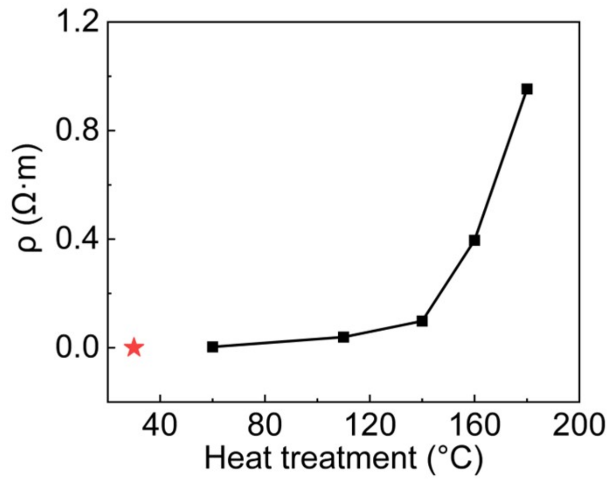

Figure S2. Variation in the resistivity of PANI film after thermal treatment at different temperatures. The red star symbol represents the resistivity of as-prepared PANI film.

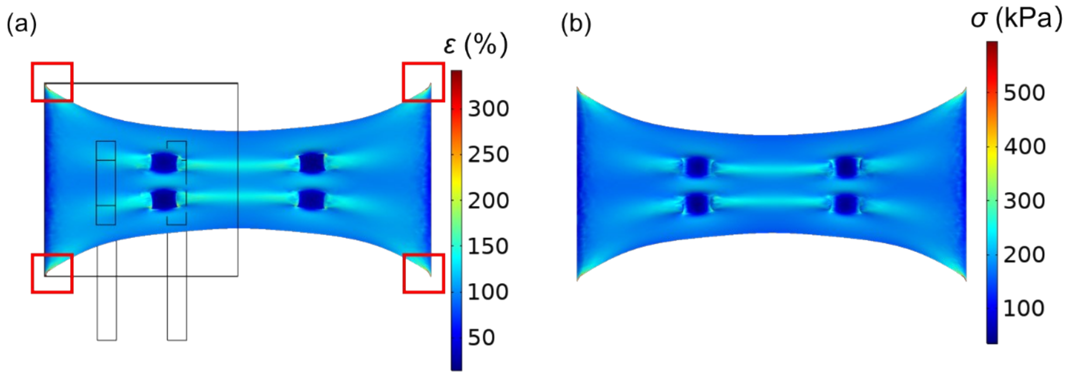

Figure S3. Simulations on the (a) strain and (b) stress distribution in the STEG when stretched at 100% strain.

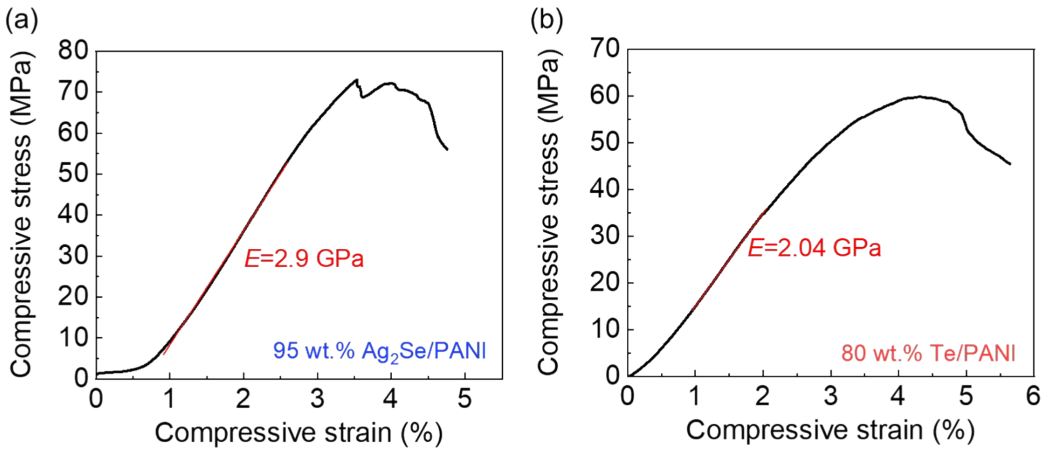

Figure S4. Compressive strain-stress curves of (a) *n*-type Ag_2Se/PANI and (b) *p*-type Te/PANI nanocomposites.

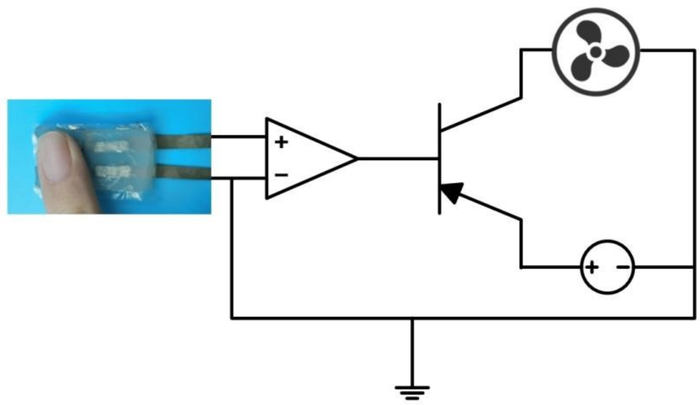

Figure S5. The designed circuit of TEG harvesting energy from body heat to drive a small fan.

References

[S1] H. Choi, B. K. Min, S. J. Joo, B. S. Kim, K. Lee, H. Kang, Y. H. Sim, M. J. Yun, D. Y. Lee and S. I. Cha, *Adv. Energy Mater.*, 2023, **13**, 2301252.

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[S3] S. Lin, W. Li, Z. Chen, J. Shen, B. Ge and Y. Pei, *Nat. Commun.*, 2016, **7**, 10287.