Supporting Information

Thermoelectric all-carbon heterostructures for flexible thermoelectric generator

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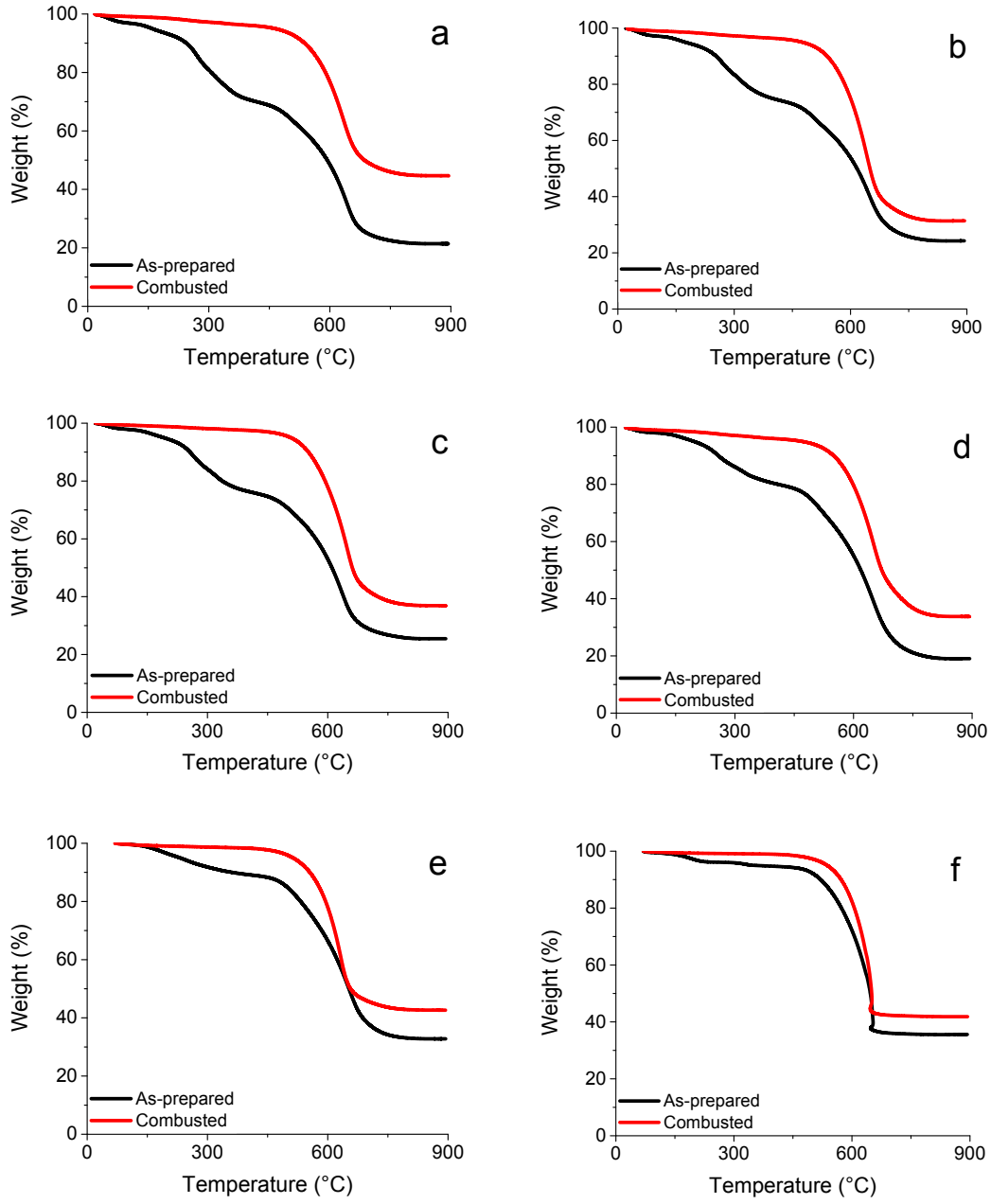

Fig. S1 TGA curves of as-prepared and combusted CNT-PEMA films with CNT contents of (a) 50, (b) 60, (c) 70, (d) 80, (e) 90, and (f) 100 wt%.

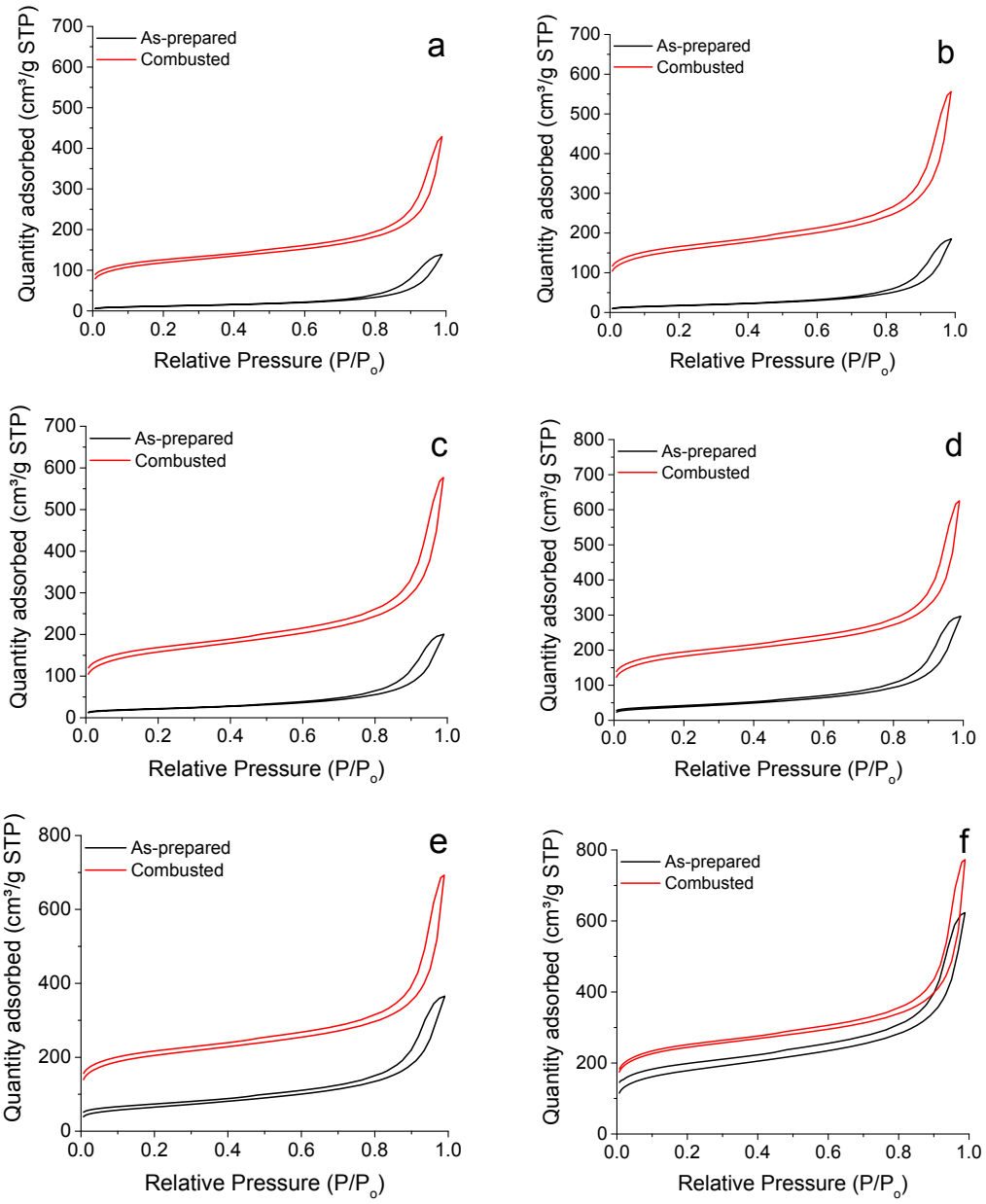

Fig. S2 Nitrogen adsorption/desorption isotherms of as-prepared and combusted CNT-PEMA films with CNT contents of (a) 50, (b) 60, (c) 70, (d) 80, (e) 90, and (f) 100 wt%.

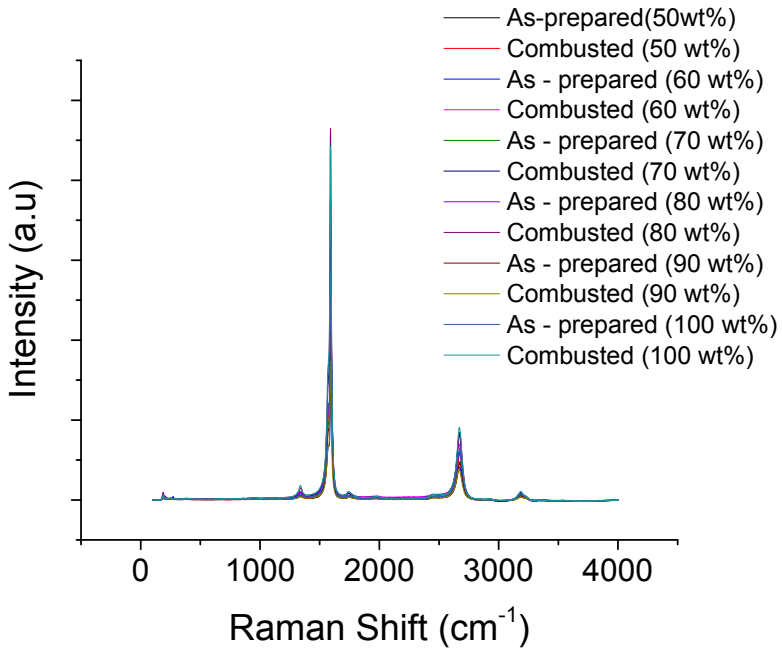

Fig. S3 Raman spectra of as-prepared and combusted CNT-PEMA films with respect to the CNT content.

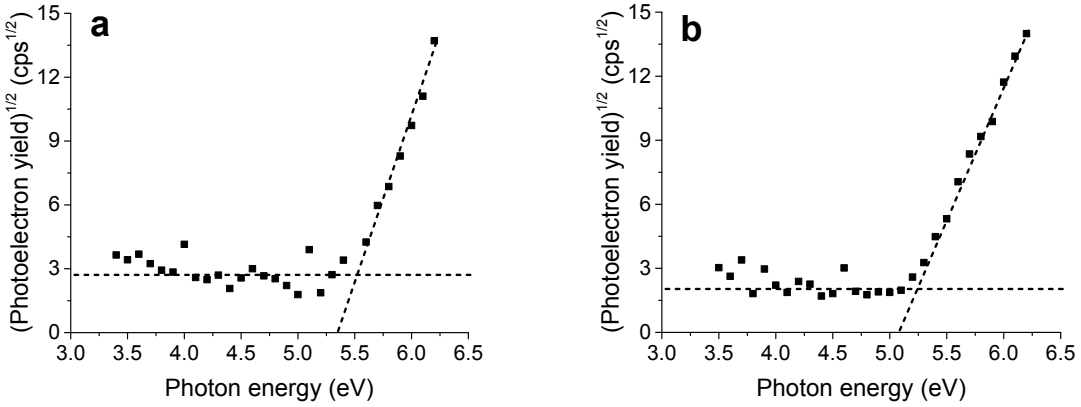

Fig. S4 Square roots of the photoelectron emission intensities as a function of the irradiated photon energy for the (a) combusted PEMA and (b) CNTs.

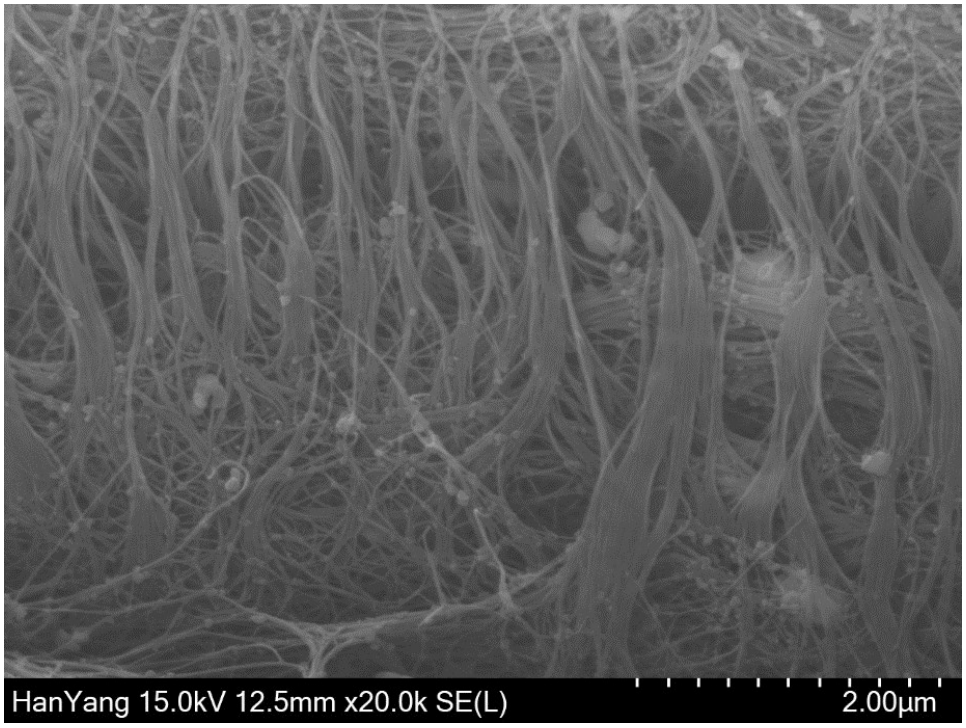

Fig. S5 Cross-section SEM image of the combusted CNT-PEMA film with a CNT content of 70 wt%.

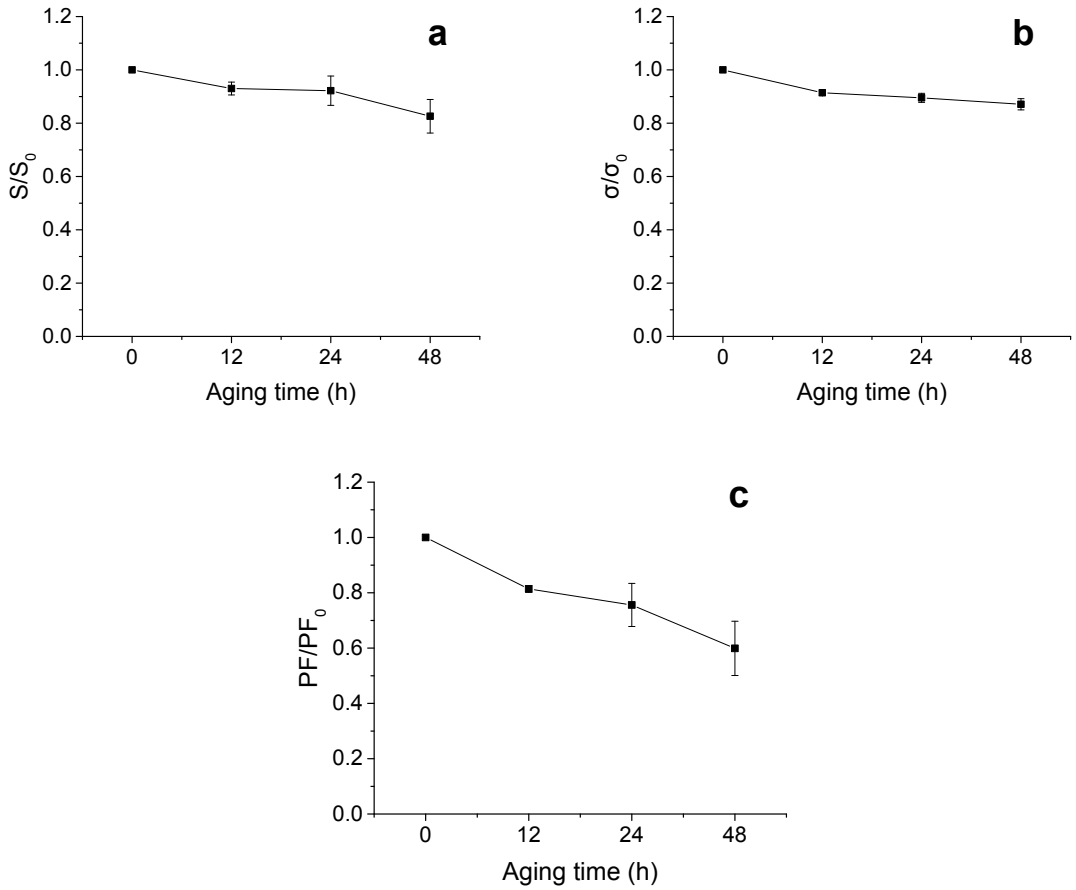

Fig. S6 (a) *S*, (b) σ, and (c) *PF* values of the combusted and 1.5 wt% PEI-treated CNT-PEMA films with a CNT content of 70 wt% with respect to the aging time.

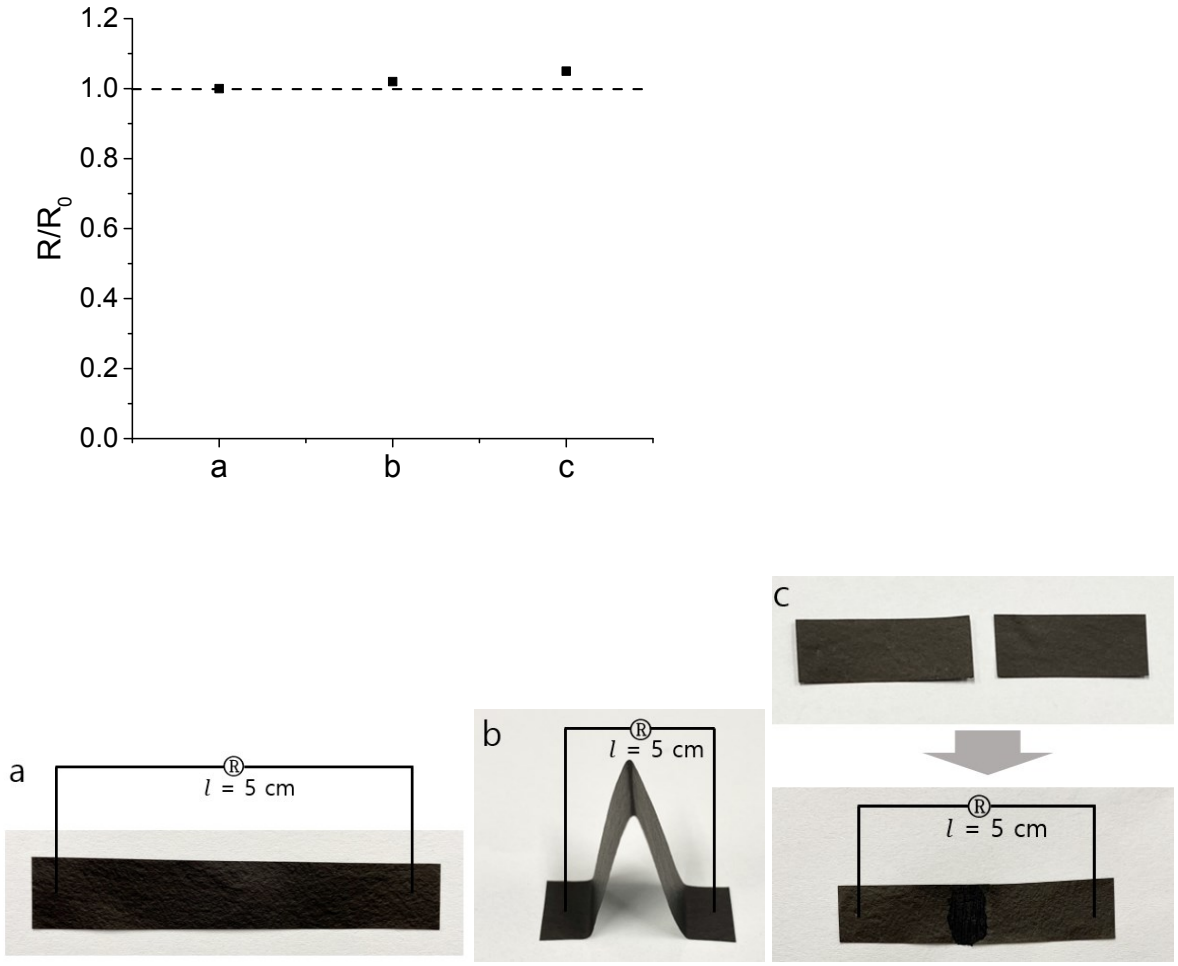

Fig. S7 Relative resistances of the (a) pristine, (b) folded, and (c) cut-and-pasted CNT-CNP films.

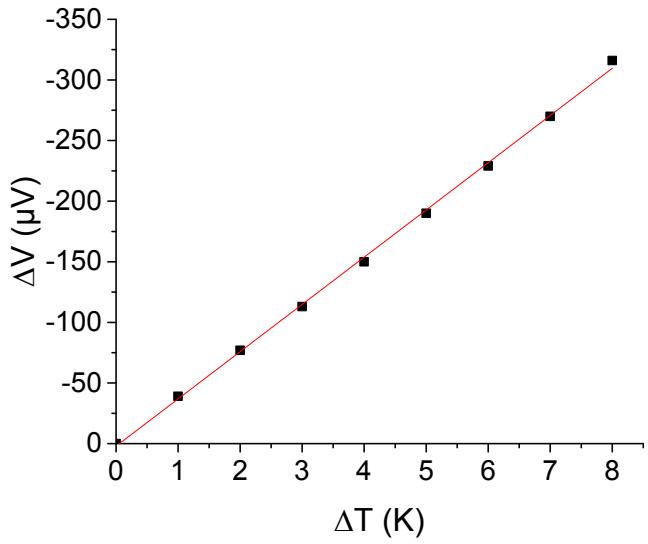

Fig. S8 The *ΔV-ΔT* curve of the constantan film, measured at room temperature. The Seebeck coefficient of the constantan film was measured to be -39.0 μV K^{-1} at room temperature, which is well matched to the reported value.[s1] The electrical conductivity of the 8 μm-thick aluminum foil (99% trace metals basis, Sigma-Aldrich) was measured to be 368000 S cm^{-1}, which corresponds well to the electrical conductivity of aluminum (377000 S cm^{-1}).

[S1] A. Guan, H. Wang, H. Jin, W. Chu, Y. Guo, G. Lu, Rev. Sci. Instrum. 84 (2013) 043903.