

Supporting Information

Seamless design of thermoelectric modules from single-walled carbon nanotubes

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Figure S1c shows SWCNT film with a laser-cut pattern for preparing TE modules. Thanks to such processing, the legs could be densely packed to elevate the levels of generated voltage. For K40 laser cutter, 70% maximum power and speed of 10 mm/s were optimum settings for SWCNT film cutting. Rectangular samples used for characterizing electrical conductivity and Seebeck coefficient of pure and doped materials were also cut with the laser cutter.

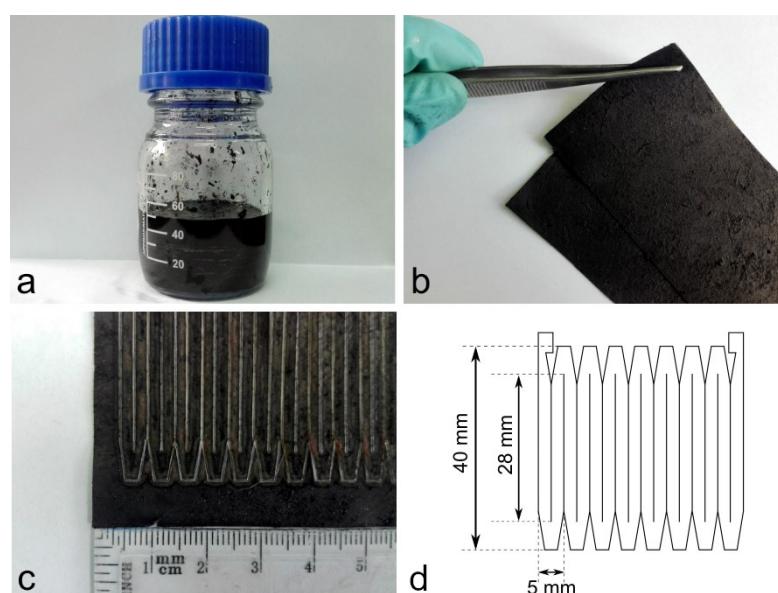


Figure S1 a) SWCNT dispersion which was used to cast free-standing SWCNT films, b) casted free-standing SWCNT films, c) laser-cut SWCNT film, and d) dimensioning of SWCNT module.

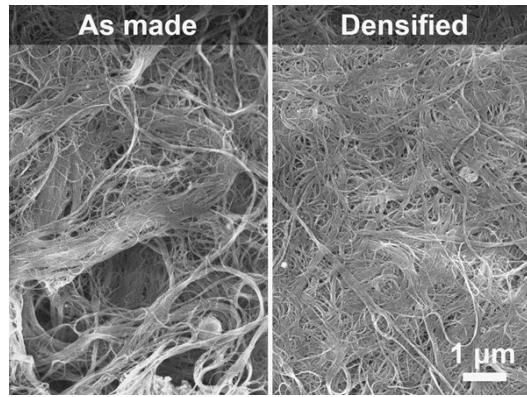


Figure S2 SEM micrographs SWCNT films: a) as made, and b) after densification.

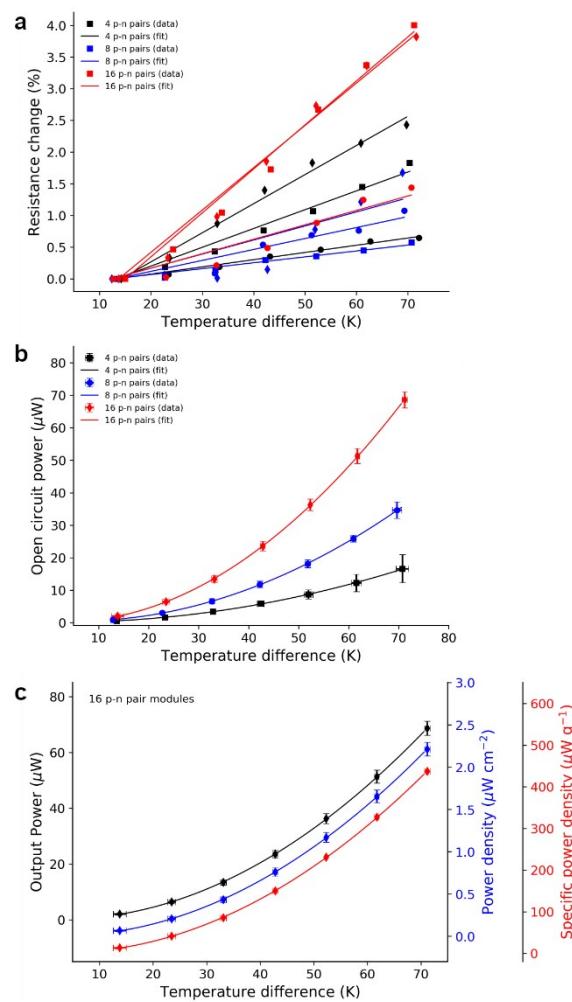


Figure S3 TE modules' properties measured in open-circuit. a) Resistance change calculated as $\Delta R/R_{RT}$ for each measured specimen, b) Power values generated by modules under the influence of different ΔT , c) Output power, power density, and specific power values for 16 p-n pair modules as a function of temperature.

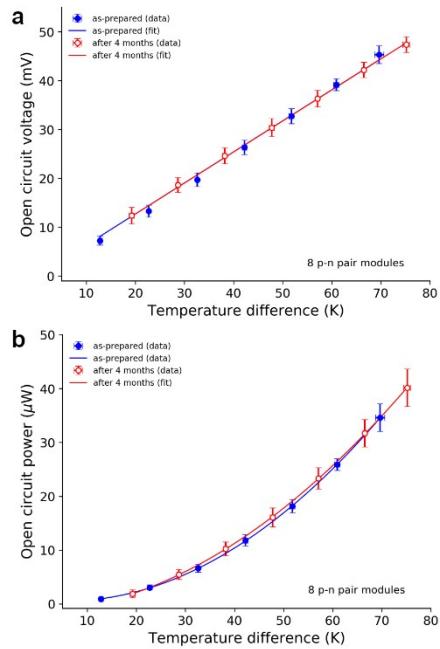


Figure S4 TE properties of as-prepared and 4 months old SWCNT-based modules: a) output voltage, b) output power.

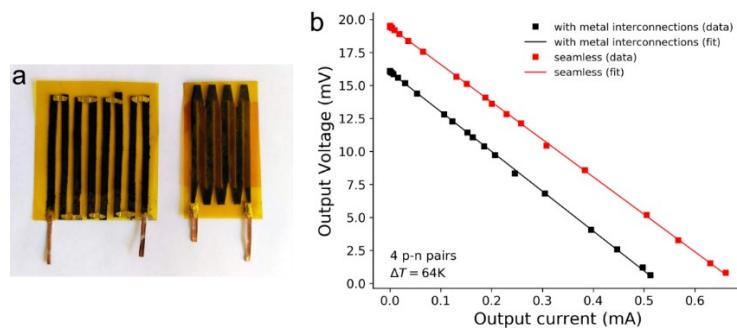


Figure S5 a) SWCNT film-based TE modules containing 4 p-n pairs with metal interconnections (typical approach; left) and seamless (this work; right), b) I-V characteristics of modules shown in panel a).