

Electronic Supplementary Information

Highly stable *n*-type thermoelectric material via electron doping into inkjet-printed carbon nanotubes by oxygen-abundant simple polymers

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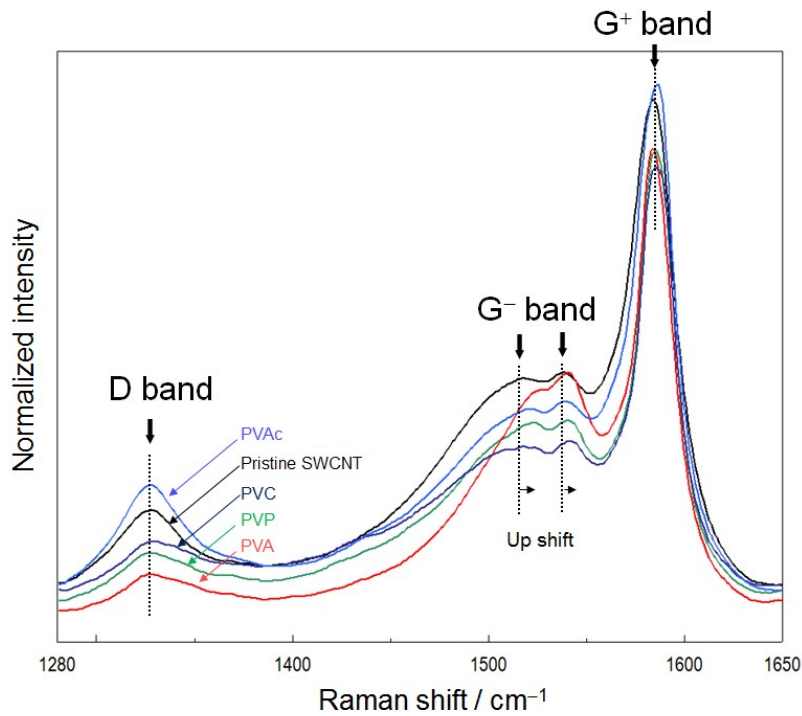


Figure S1 Raman spectra of pristine and polymer-doped SWCNT thin films recorded at room temperature in air. With the excitation laser wavelength of 532.36 nm, the (11,2) and (9,3) metallic nanotubes are in resonance. While the Raman shift frequency of the D and G⁺ bands (TO mode) are almost remain constant, the G⁻ band (LO mode) peak shows measureable shifts to higher frequencies by the polymers doping. In metallic nanotubes, the LO mode frequency usually hardens and undergoes upshift by charge carrier doping. Therefore, at least metallic nanotubes are affected by the electron injections. Seebeck coefficient of metallic SWCNTs is generally much smaller than that of semiconducting ones, and thus the thermoelectric voltages shown in the main manuscript are dominantly contributed by semiconducting SWCNTs. Considering this fact along with the Raman shifts, the electron should be also injected into the semiconducting SWCNTs, showing the n-type thermoelectric properties.

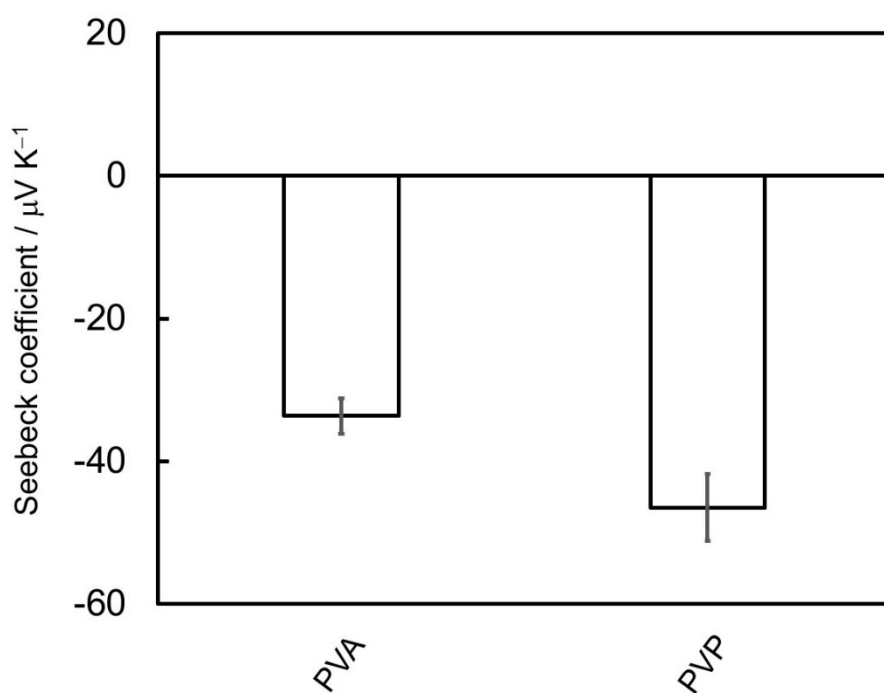


Figure S2 Seebeck coefficients of buckypapers doped with PVA and PVP at 300 K in air. The thickness of the film was around 100 μm . The doping was carried out by immersing the buckypapers into each solution in water (PVA) and DMF (PVP) over a night and then dried in air. The concentration of each solution was 10 wt%.