Supplementary information

Carbon nanotube papers with p-n junctions along thickness direction

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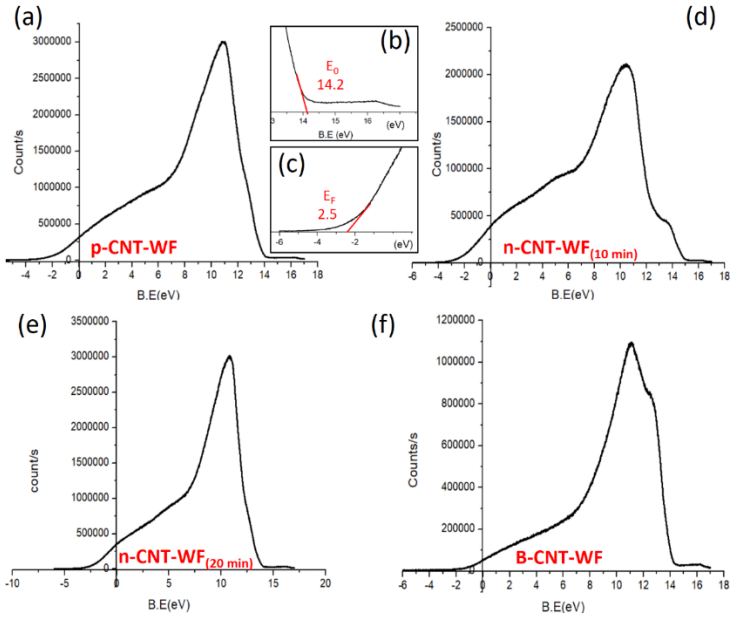

Figure S1. UPS spectra of samples made by p-CNT-WF with f_{CNT} = 20 w.t% (a) and determination of E_o and E_F (b-c). UPS spectra of samples made by n-CNT-$WF_{(10mins)}$ (d), n-CNT-$WF_{(20\ mins)}$ (e) and B-CNT-WF(f).

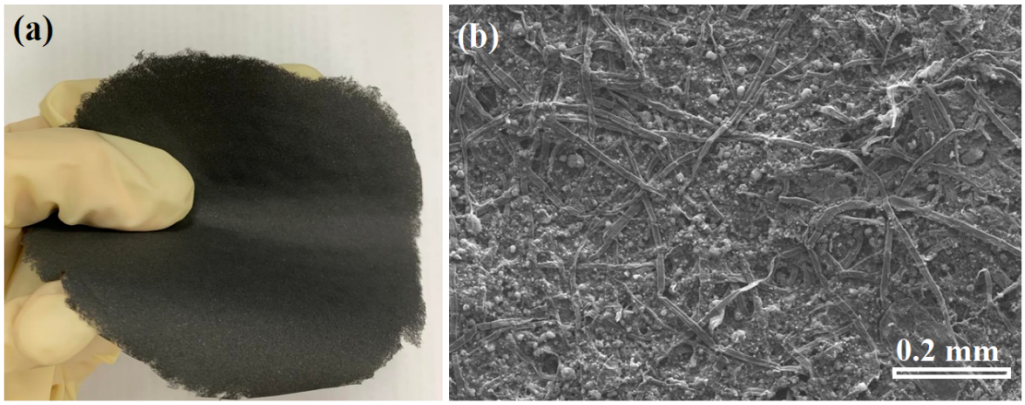

Figure S2. Optical (a) and low magnification (× 100) SEM images of p-CNT-WF with f_{CNT} = 20 w.t% (b).

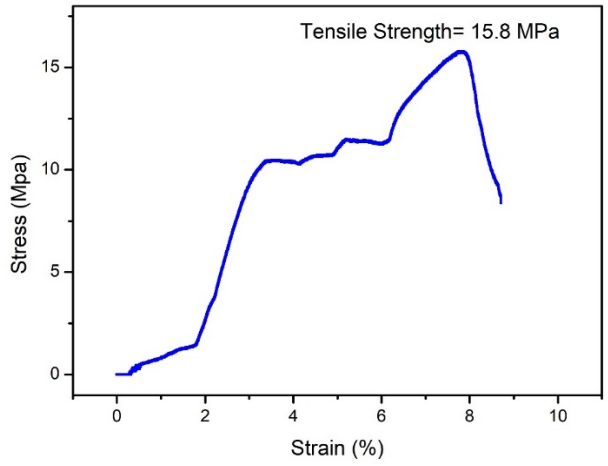

Figure S3 stress-strain curves of the p-CNT-WF at f_{CNT} =20wt%.

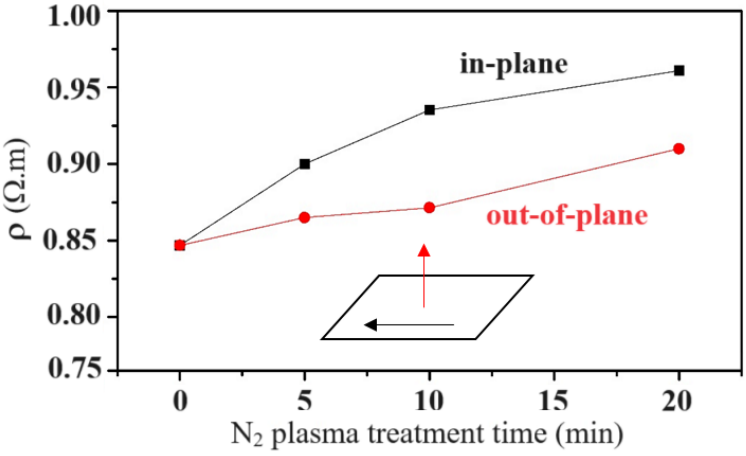

Figure S4. The in-plan and out-of-plan resistivity of p-CNT-WF as a function of plasma treatment time.

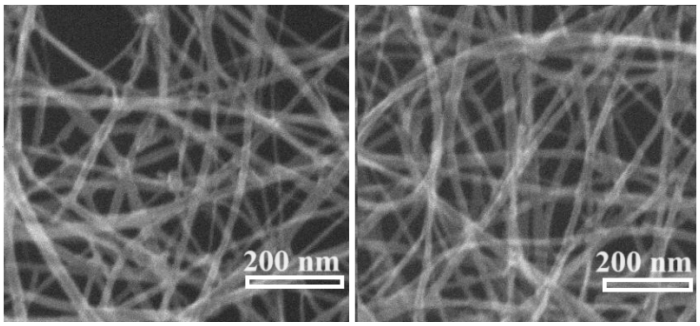

Figure S5. SEM images of CNTs before (left) and after N_2 plasma treatment (20 min, right)

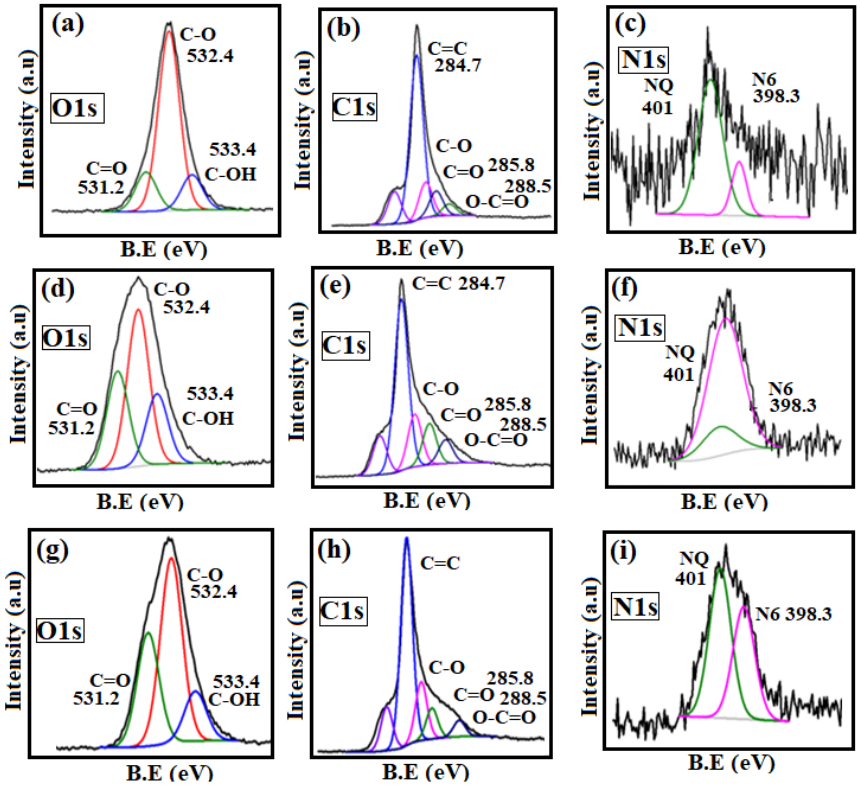

Figure S6. XPS spectra of O1s, C1s and N1s for p-CNT-WF (a-c), n-CNT-$WF_{(10min)}$ (d-f) and n-CNT-$WF_{(20min)}$ (g-i).

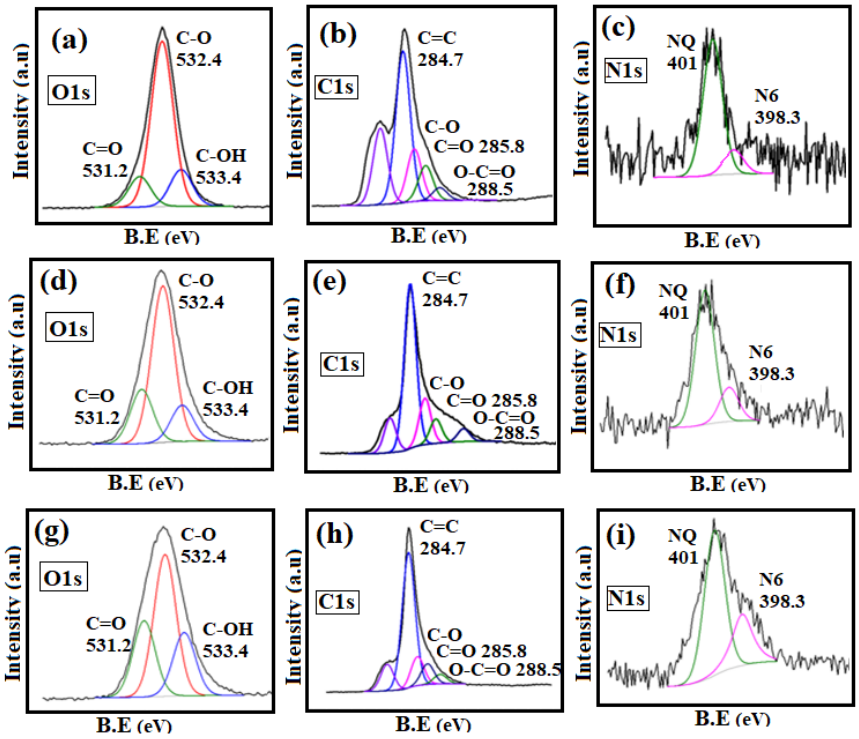

Figure S7. XPS spectra of O1s, C1s and N1s for B-CNT-WF (a-c), B-CNT-WF$_{(10min)}$ (d-f) and B-CNT-WF$_{(20min)}$ (g-i).

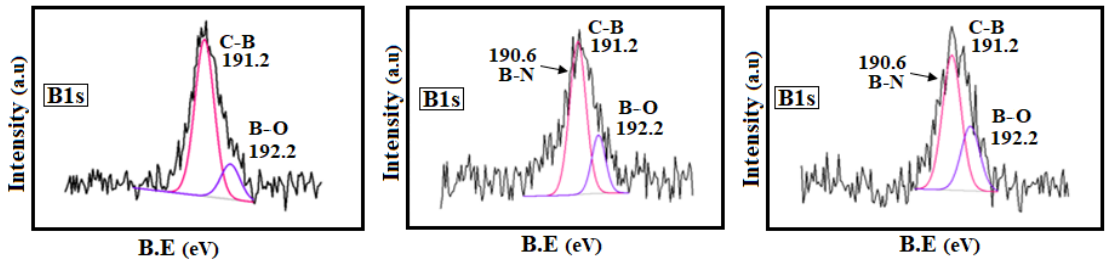

Figure S8. XPS spectra of B1s for p-CNT-WF (a), n-CNT-WF$_{(10min)}$ (b) and n-CNT-WF$_{(20min)}$ (c).

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