Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Near infrared laser–heated electrospinning and mechanical properties of poly(ethylene terephthalate)/multi-walled carbon nanotube nanofibers

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The solubility test was carried out for PET/MWNT solutions at different concentrations of PET/MWNT (0.5 wt% MWNT) in TFA as a solvent. The well dispersed state of PET/MWNT solution at 0.001 and 0.002 wt% concentrations was well kept even after 4 hr (Figure S1a-b), indicating a good dispersion of MWNTs. We also measured UV/Vis spectra of the PET/MWNT solutions at different PET/MWNT concentrations of 0.001 – 0.004 wt%, using UV/Vis spectrophotometer (Agilent Technology, G1103A) at room temperature. Figure S1c shows a good linear relation between absorbance and concentration of PET/MWNT solution, indicating a good MWNT dispersion in polymer matrix.

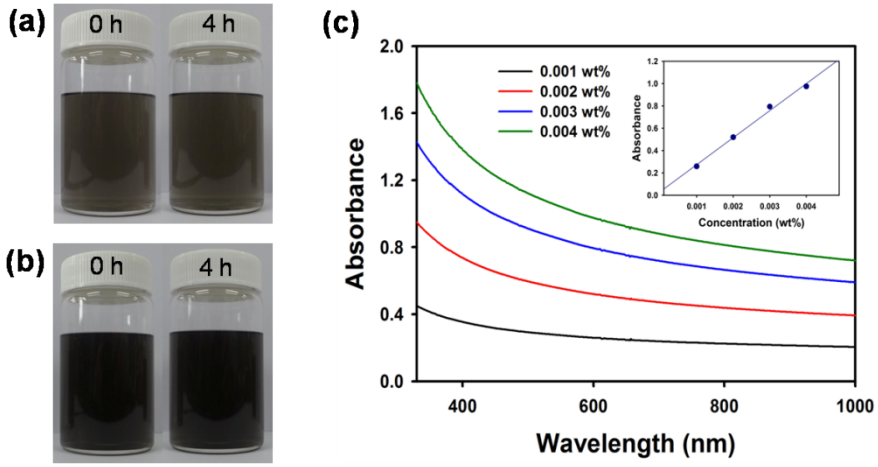

Figure S1. (a, b) The solubility test measured at 0 and 4 h after sonication of the polymer composite solutions at different PET/MWNT concentrations: (a) 0.001 wt% and (b) 0.002 wt%. (c) The UV/Vis spectra of the polymer composite solutions at different PET/MWNT concentrations of 0.001 – 0.004 wt%. The inlet in (c) indicates a linear relation between absorbance and PET/MWNT concentration in the polymer composite solution.

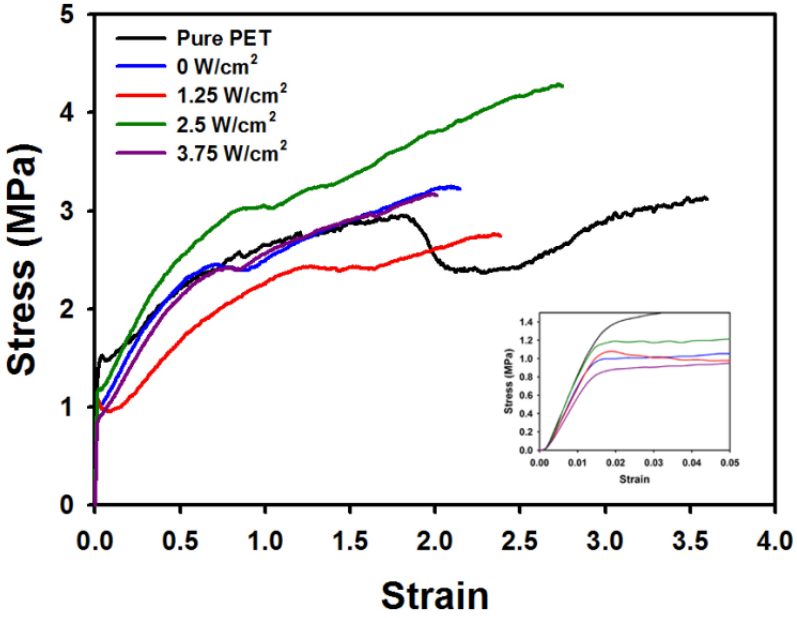

Figure S2. Stress–strain curves of the pure PET and PET/MWNT nanofiber webs without laser heating and laser-heated electrospun PET/MWNT nanofiber webs.

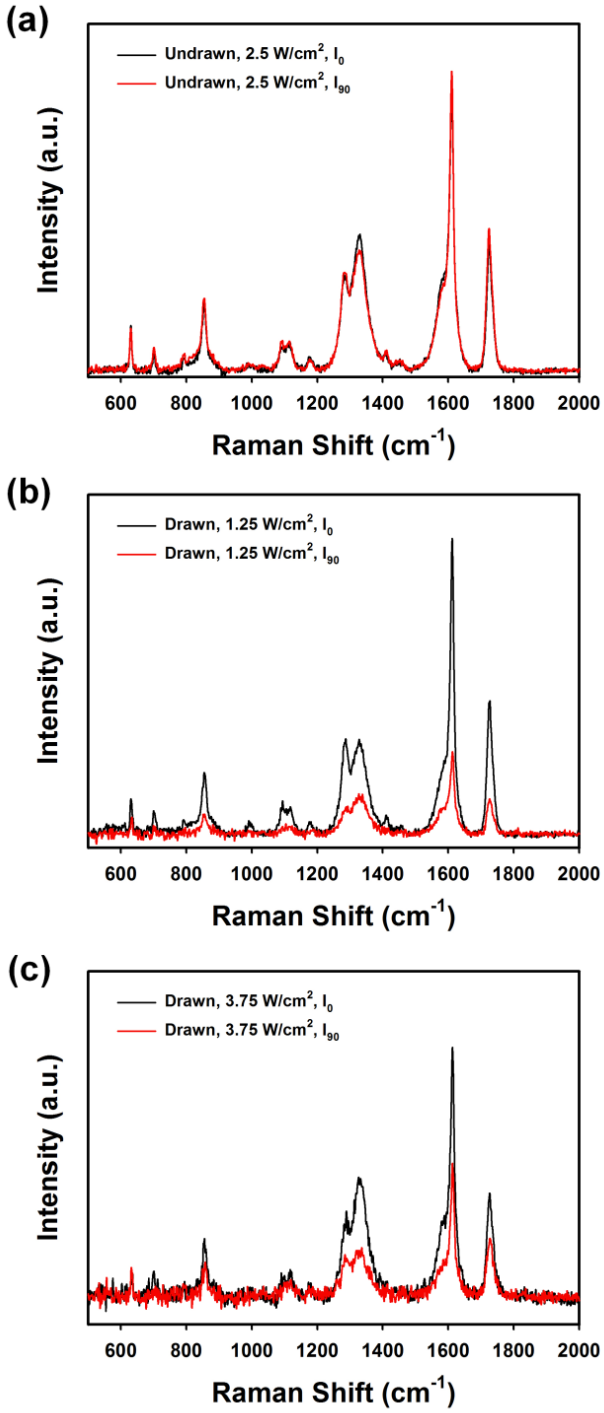

Figure S3. Polarized Raman spectra of (a) undrawn PET/MWNT nanofiber webs that were laser-heated at 2.5 W/cm^2 and drawn PET/MWNT nanofiber webs that were laser-heated at (b) 1.25 and (c) 3.75 W/cm^2.