

Supporting Information

Rate-dependent and self-healing conductive shear stiffening nanocomposite: a novel safe-guarding material with force sensitivity

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Fig.S1. Schematic of (a-d) electrochemical impedance spectra (EIS) measurement systems and (e) compression rate-dependent conductivity test setup. Tested samples are placed in the mould made by teflon and copper (c and d). The impact stress with different rates are adjusted by changing the drop height of the weight (e).

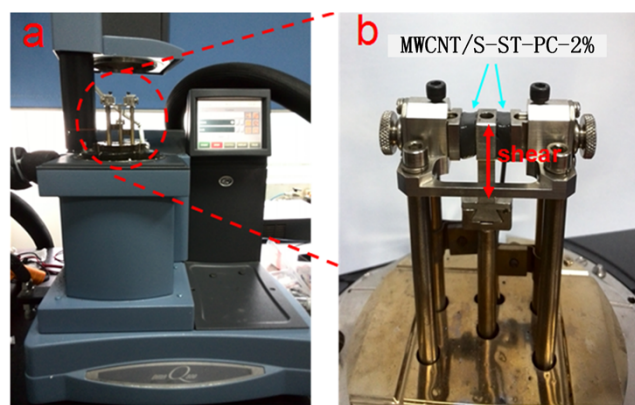


Fig.S2. Schematic of dynamic mechanical analysis (DMA) measurement systems (a); specimens were cut into small cubes with 10 mm in length, width and 4 mm in thickness (b).

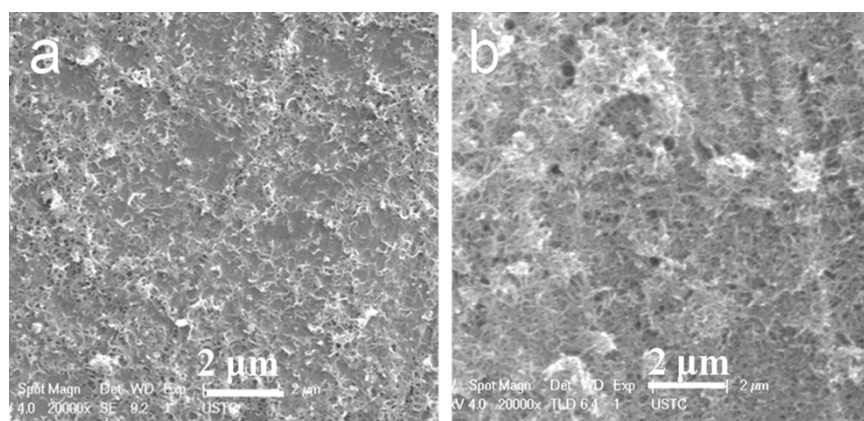


Fig.S3 SEM images of MWCNT treated by acetone, alcohol, with (a) and without (b) sodium dodecyl benzene sulfonate (SDBS). The dispersion of WMCNT in Fig.S3a is homogeneous while many bundles exist without the treatment of SDBS (b).

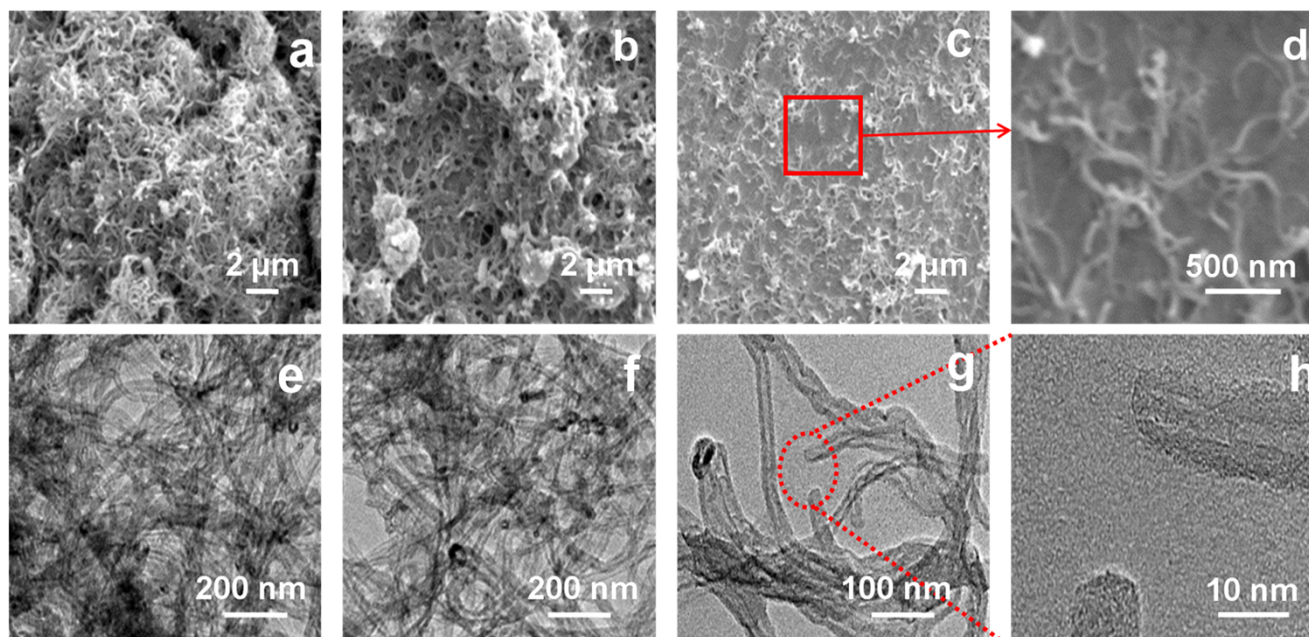


Fig.S4 SEM images of (a) P-MWCNT with large numbers of bundles, (b) A-MWCNT and (c and d) A-A-MWCNT. Typical TEM images of (e) P-MWCNT, (f) A-MWCNT and (g) A-A-MWCNT; HRTEM images of (h) A-A-MWCNT. The agglomeration of P-MWCNT is very serious; after the treatment of different organic solvents, large numbers of bundles exist in A-MWCNT (b); the dispersion of A-A-MWCNT is ideal and the homogeneous dispersity indicates the positive performance of the solvent treating. TEM images are in accordance with the results of SEM images.