Electronic Supplementary Information

Bio-inspired microstructure-reorganized behavior of carbon nanotube yarn induced by cyclic stretching training

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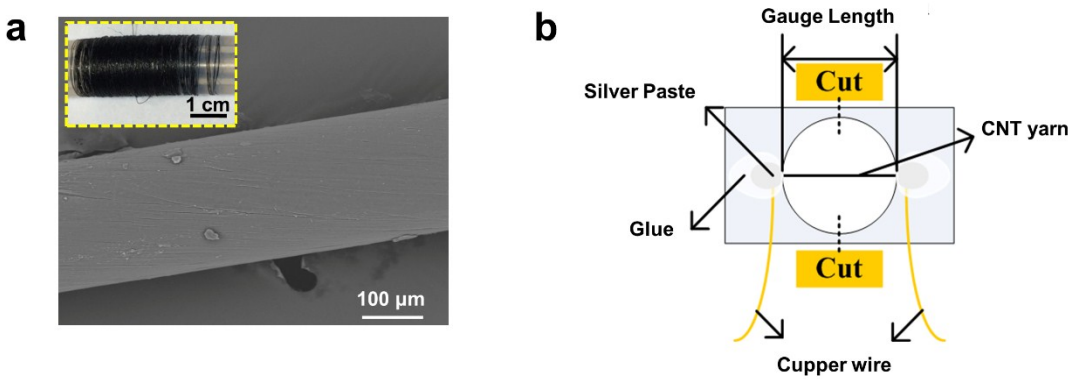

Fig. S1. (a) Optical and SEM images of the pristine CNT yarn. (b) Schematic diagram of the sample preparation.

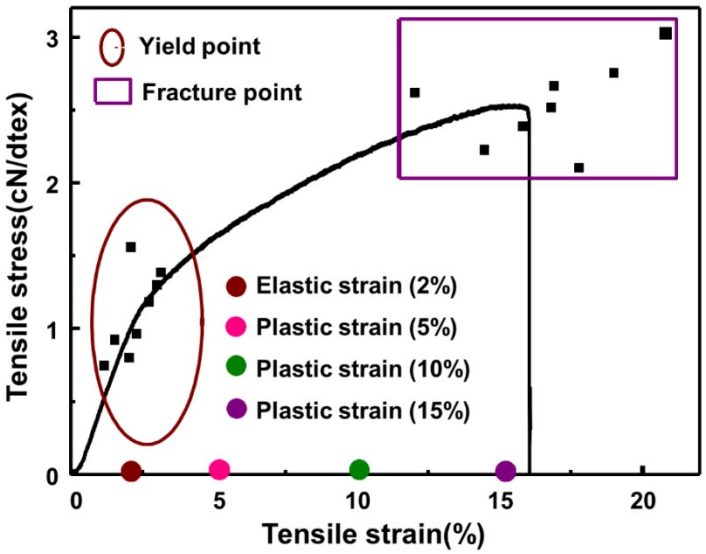

Fig. S2. Representative tensile stress-strain curve of the pristine CNT yarn.

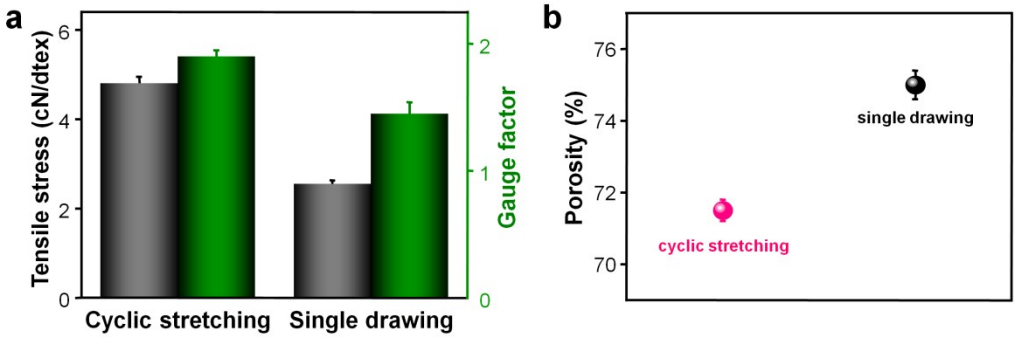

Fig. S3. (a) Comparison of tensile stress and gauge factor between CNT yarns after cyclic stretching training and single drawing approach. (b) Comparison of porosity between CNT yarns after cyclic stretching training and single drawing approach.

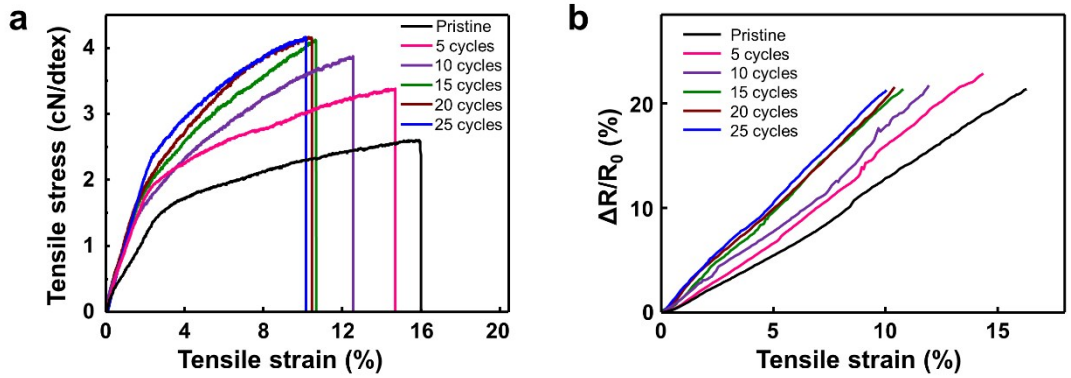

Fig. S4. (a) Typical tensile stress-strain curves of the CNT yarn after various stretching cycles under the same cyclic stretching strain (10% strain). (b) Relative resistance changes in response to the tensile strain of CNT yarns after various stretching cycles under the same cyclic stretching strain (10% strain).

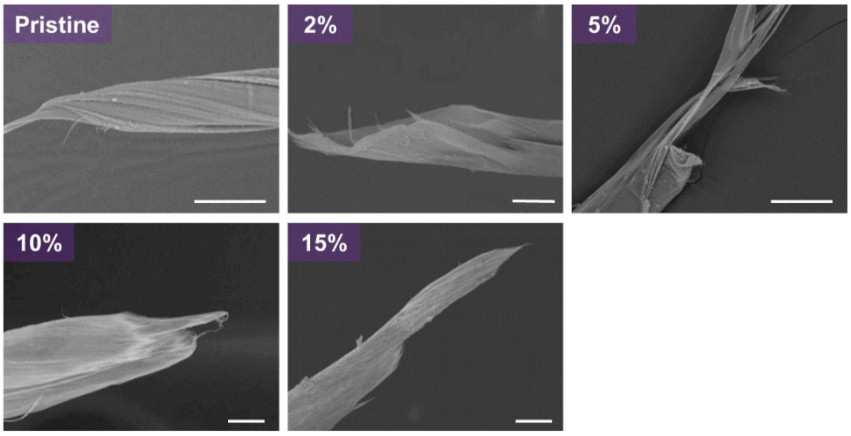

Fig. S5. SEM images of CNT yarns' failure surfaces after various stretching strains under the same cyclic stretching cycle (15 cycles). Scale bar, 50 μm.

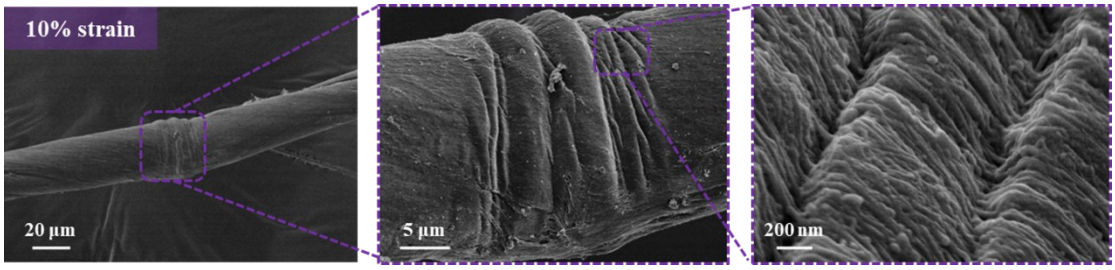

Fig. S6. Wave-like kinks formation of the fractured CNT yarn after the treatment of cyclic stretching (10% strain).

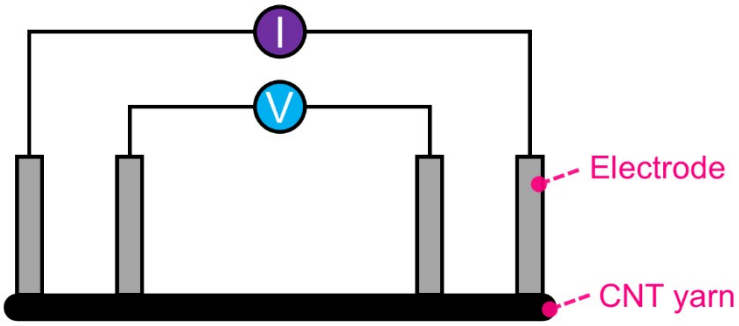

Fig. S7. Illustration of 4-point probe measurement.

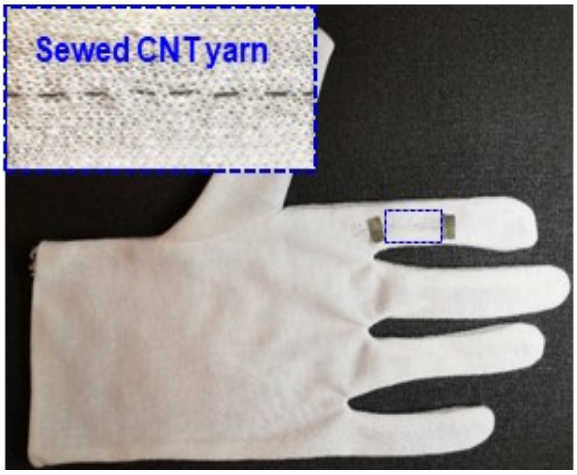

Fig. S8. Photographs of the sewed CNT yarn into a white glove. Scale bar, 1 cm.

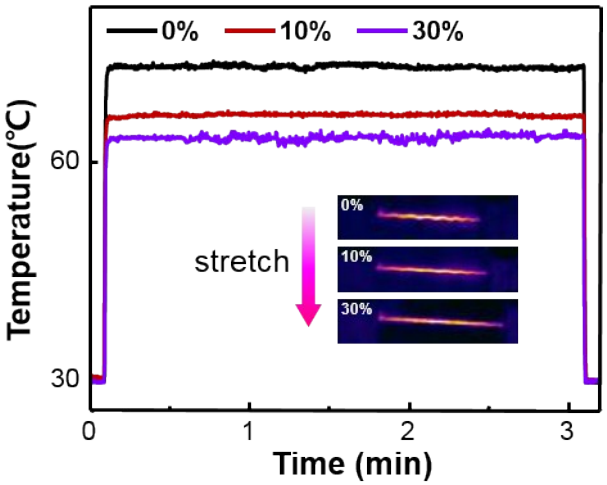

Fig. S9. Temperature to time curves of the wrapping yarn under different stretchy states (voltage 1V).