

Supplementary Information

High Performance, Freestanding and Superthin Carbon Nanotube/Epoxy Nanocomposite Films[†]

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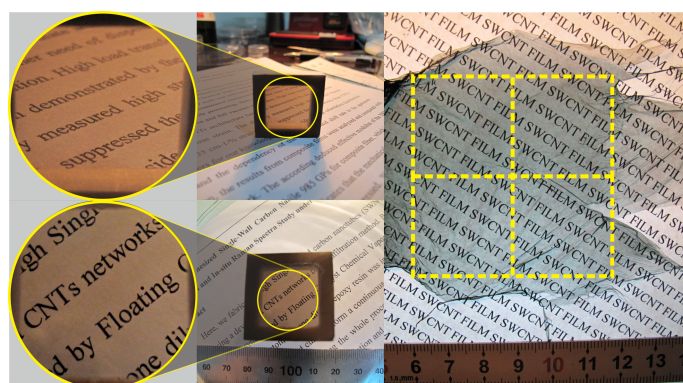


Fig. S1 The optical image of the pure as grown SWNTs film on a paper. Central squares indicate the zone mounted on the open frames (30×30 mm) as shown beside. Strong micro inter-bundle interface and high macro strength make the pure SWNTs film freestanding and easy to be transferred to any substrate. Enlarged images give the good optical transparency of it.

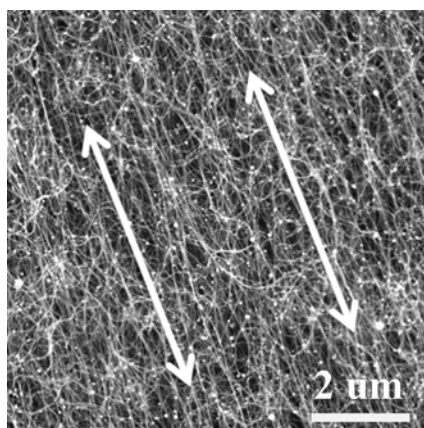


Fig. S2 Typical SEM image of the pure as grown SWNTs film, from which we can see two structure features. One is that the nanotubes in the film have a little preferred orientation along the direction of the gas flow (lines with arrows at both sides). Another point should be noted is the porous structure of the films, which is crucial for the injection or infiltration of the acetone diluted epoxy resin.

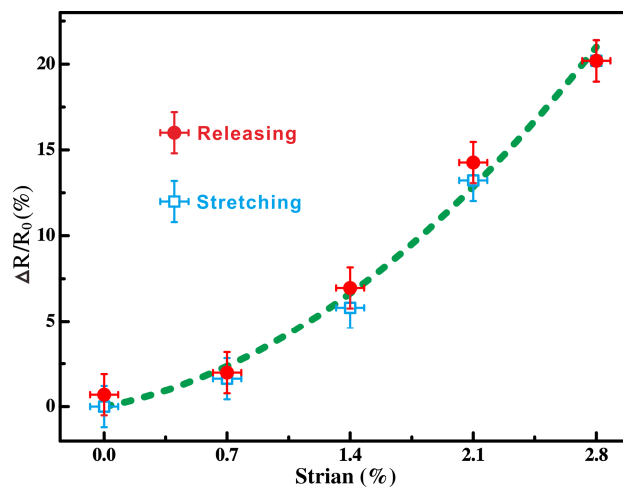


Fig. S3 The normalized resistance change of a composite film as a function of tensile strain in a typical stretching/releasing cycle. R_0 represents the electrical resistance of the pristine composite film without tensile strain, and ΔR represents the resistance change of tensile composite film relative to that of the pristine composite film. Blue open squares and red circles represent the experimental data, while green dashed line is the best fitting line to a parabola shape. The resistance increases as the tensile strain increases up to 2.8, and returns to its original value as the strain decreases to zero. These reversible and repeatable resistance changes indicate that the whole stretching/releasing process is elastic within this low strain range, which is consistent with the mechanical and Raman tests.