Supporting Information

Carbon Nanotubes/Hydrophobically Associated Hydrogels as Ultrastretchable, Highly Sensitive, Stable Strain and Pressure Sensors

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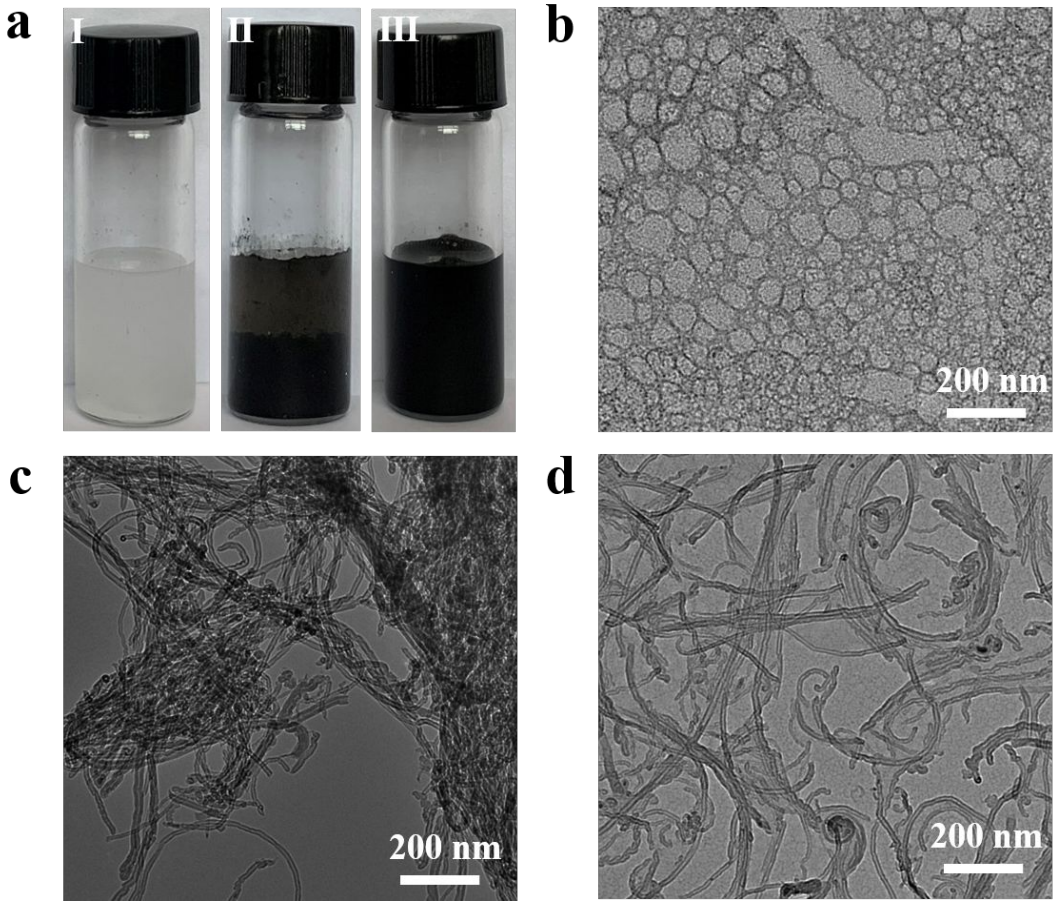

Figure S1. (a) Photographs showing the dispersibility of (i) SDS/LMA aqueous solution, (ii) CNTs/LMA aqueous suspension and (iii) SDS/CNTs/LMA aqueous mixture. TEM images of (b) SDS/LMA, (c) CNTs/LMA and (d) SDS/CNTs/LMA.

The affinity of CNTs to the hydrogel matrix was further demonstrated by evaluation the diffusion ability of CNTs from the hydrogel. The CNTs/HAPAAm hydrogel (volume: 200μl) were soaked in 5 mL DD water separately for 48h, and the soaking solution was collected for the UV-vis analysis. The calibration curve for the absorbance at 600 nm was used as standards (Figure S2a). As shown in Figure S2b, the soaking solution kept colorless after 48h, and over 99.5% CNTs remained in the hydrogel matrix according to the absorbance of the soaking solution at 600 nm.

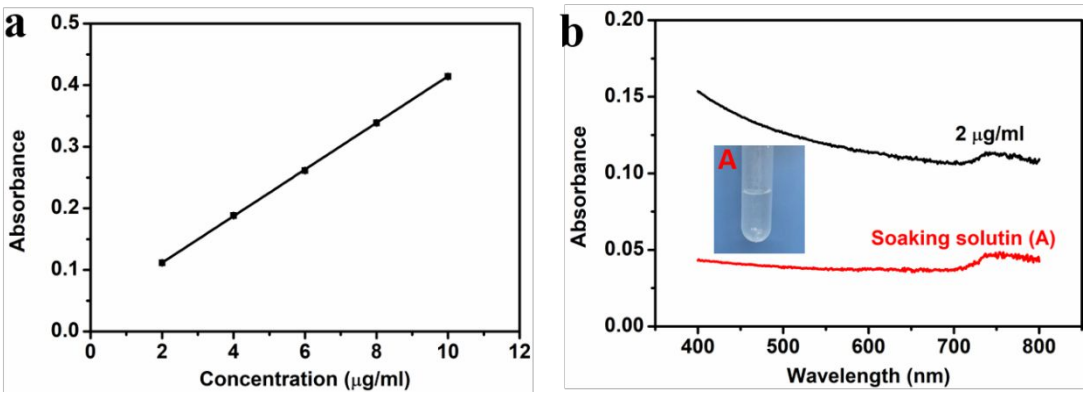

Figure S2. (a) Calibration curve for wavelength of 600 nm. (b) Transmission spectra of reference CNTs suspension and soaking solution.

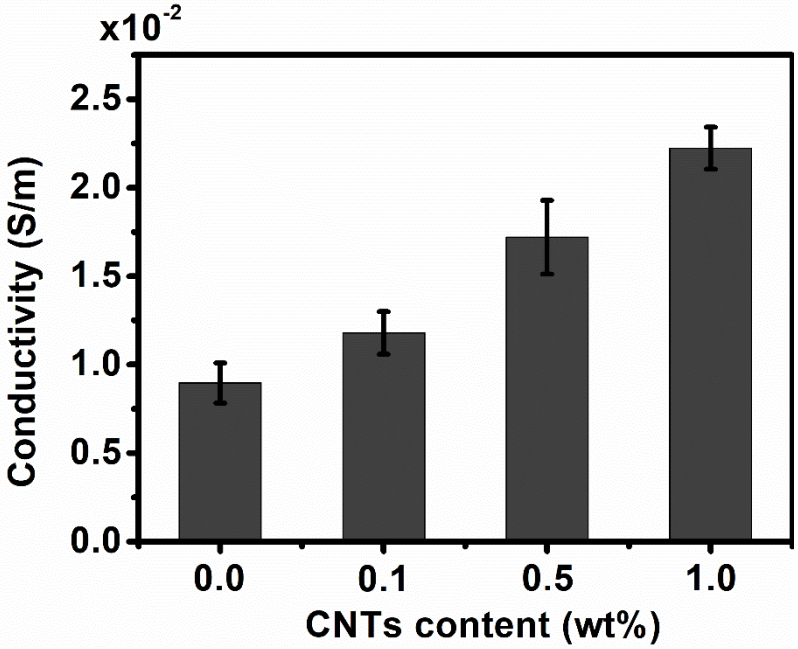

Figure S3. The conductivity of the CNTs/HAPAAm hydrogels with different CNTs contents.

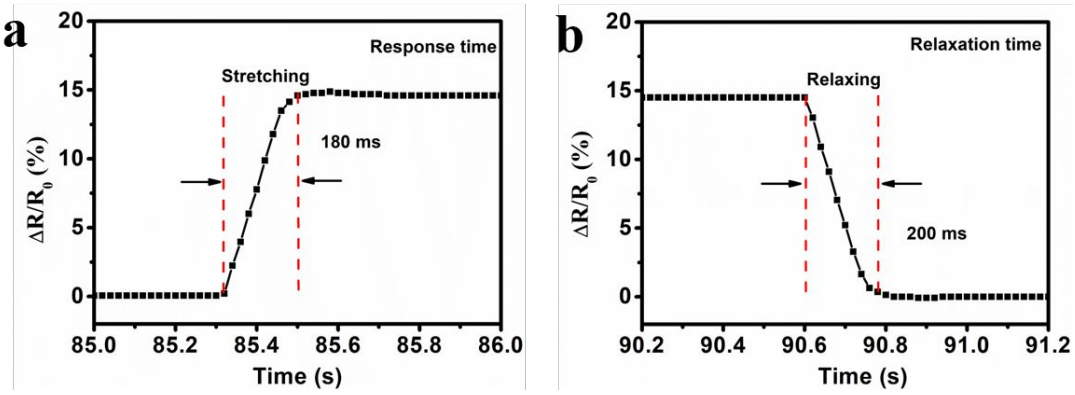

Figure S4. (a) The response time of the strain sensor for stretching. (b) The relaxation time of the strain sensor for relaxing.

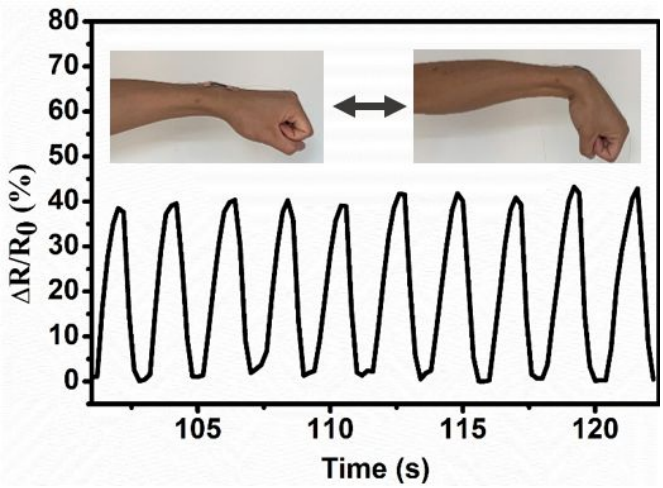

Figure S5. Wearable strain sensor for monitoring wrist bending.

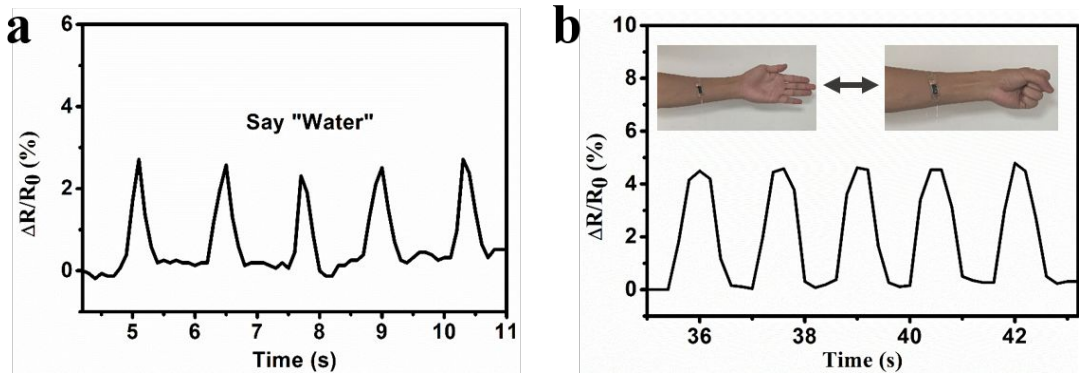

Figure S6. Wearable strain sensor for detecting (a) pronouncing "water" and (b) radial muscle contraction.

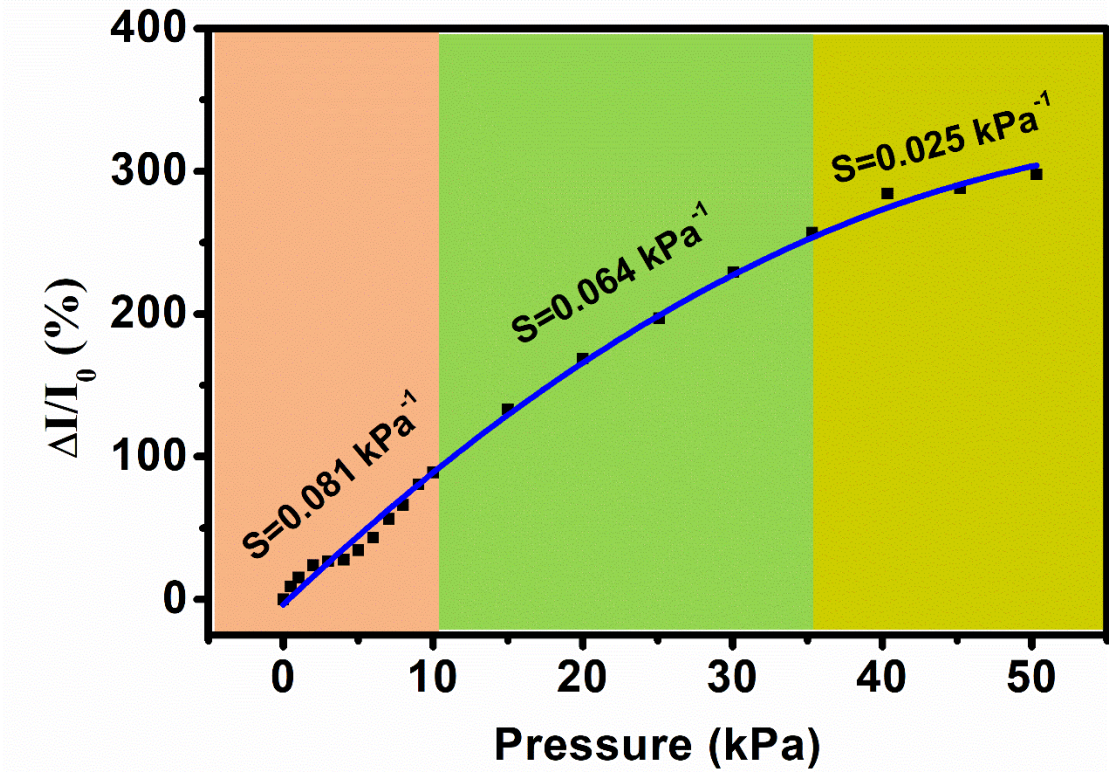

Figure S7. The plots of current variation versus pressures up to 50 kPa and the corresponding sensitivity (*S*) of the HAPAAm hydrogel without CNTs.

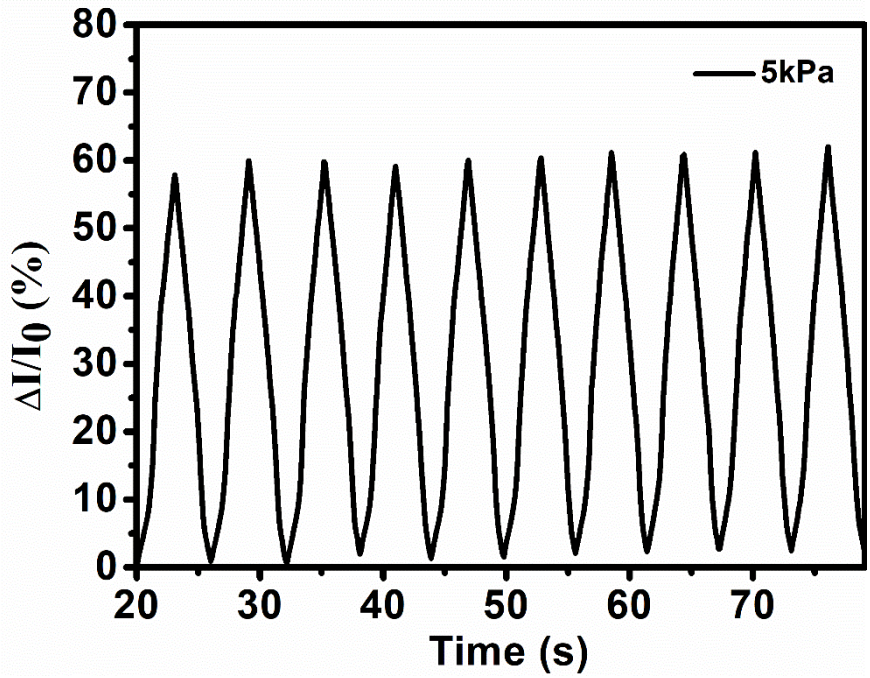

Figure S8. Relative current variation under cyclic pressure of 5 kPa.

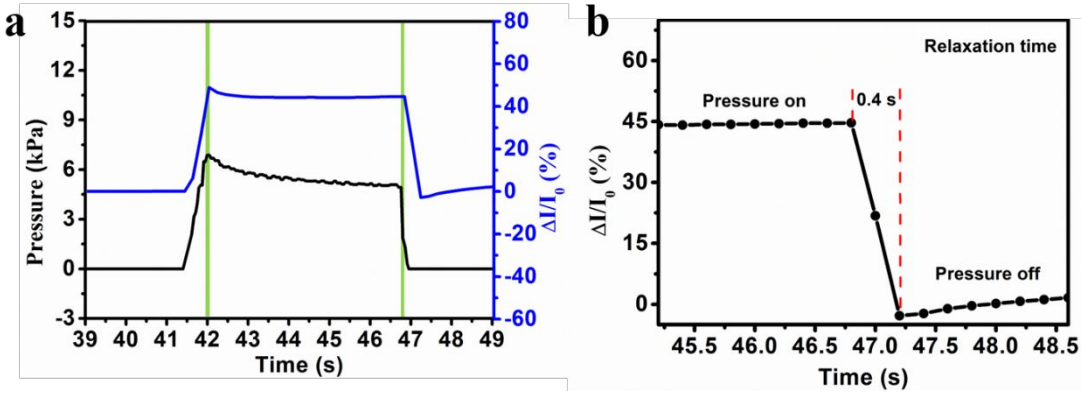

Figure S9. (a) Pressure change and relative current variation curves of the strain sensor during loading-unloading process. (b) The relaxation time of the pressure sensor upon pressure unloading.