Supporting Information

Ultrasensitive and Highly Compressible Piezoresistive Sensor Based on Polyurethane Sponge Coated with Cracked Cellulose Nanofibril/Silver Nanowire Layer

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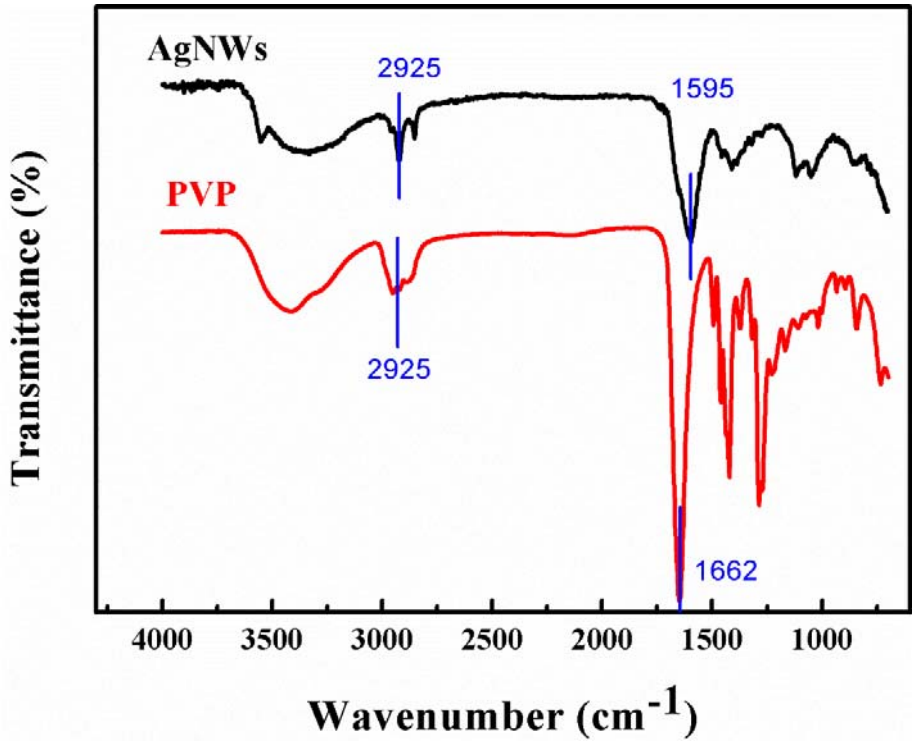

Fig. S1 FT-IR spectrum of as-prepared AgNWs and PVP

It can be seen from the Fig. S1 that the spectra of AgNWs and PVP are similar, indicating the presence of PVP on the surface of the AgNWs. The FTIR spectrum of the PVP presents three bands at 2925 cm^{-1}, 2890 cm^{-1} and 1662 cm^{-1}, corresponding to the symmetric and asymmetric stretching vibration peaks of -CH_2- and the stretching vibration absorption peaks of C=O and C-N, respectively. Due to the interaction between the AgNWs and PVP, the C=O stretching vibration absorption peak of the AgNWs moves to the low wave number, which indicates that the Ag atoms on the surface of the AgNWs interact with the oxygen atoms on the surface of PVP. In addition, the stretching vibration peak of -CH_2- of AgNWs is significantly enhanced relative to PVP, which proves that the molecular chain of PVP may be adsorbed on the (100) crystal plane of the Ag crystal, causing the crystal to grow on the (111) crystal plane.

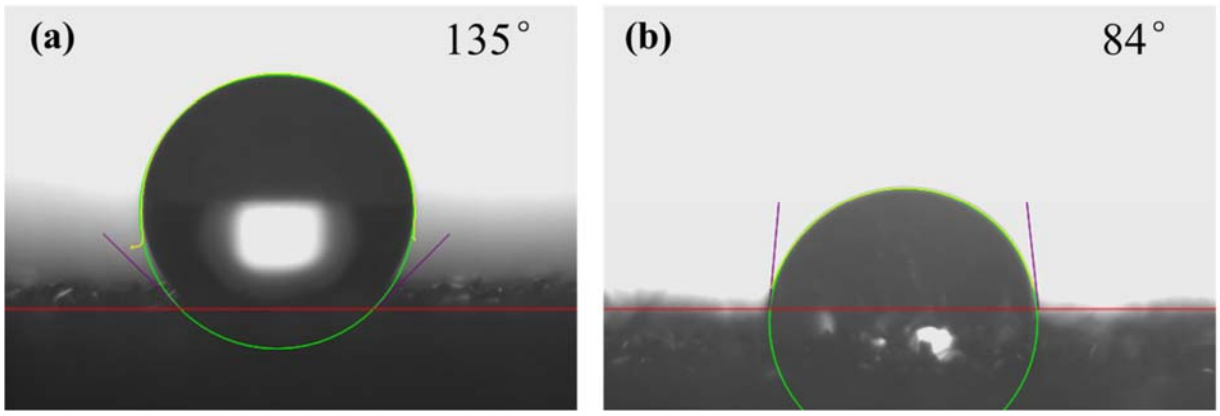

Fig. S2 Water contact angle (WCA) of (a) original PU sponge and (b) PDA treated PU sponge.

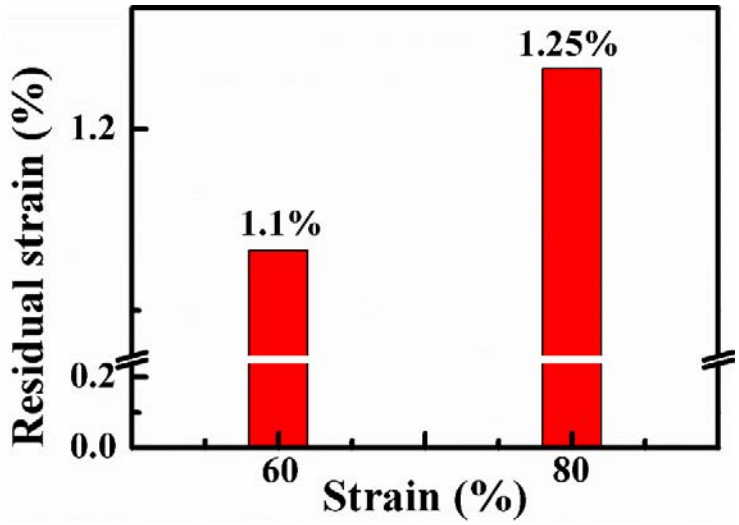

Fig. S3 Residual strain of the PU sponge after 60% and 80% compression strain.

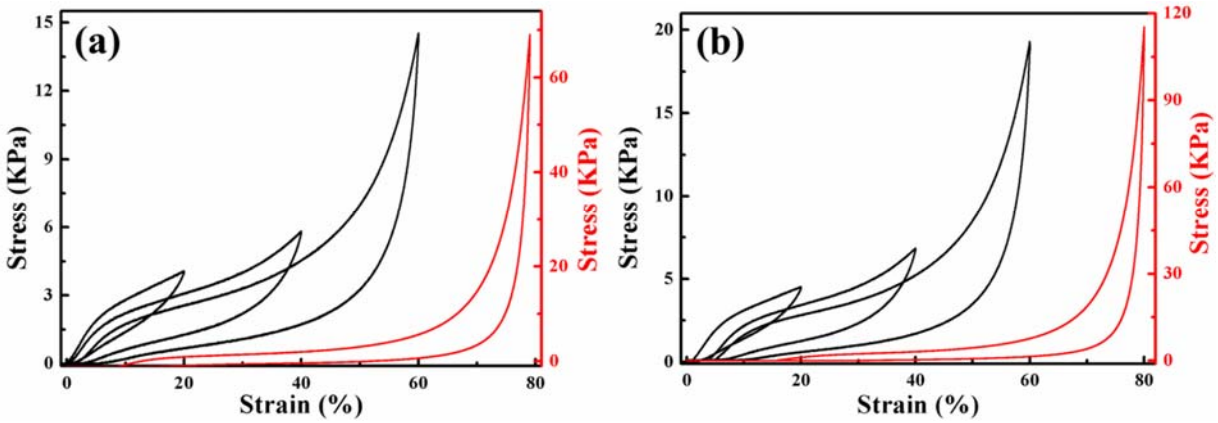

Fig. S4 Compressive stress-strain curves of (a) CA@PU_6 sponge and (b) CA@PU_{12} sponge under different strain