Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supplementary Information

Sunlight self-healable transparent strain sensor with high sensitivity and durability based on silver nanowires/polyurethane composite film

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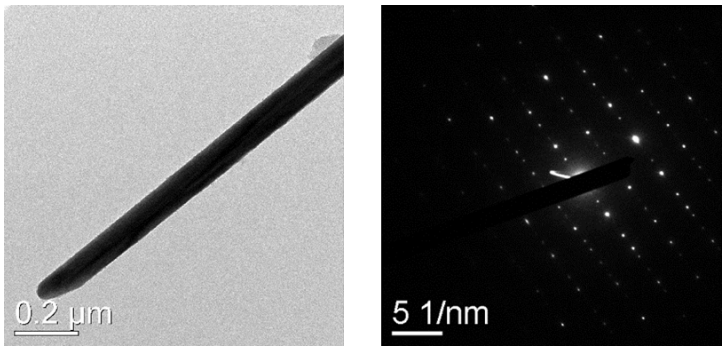

Fig. S1 TEM image and electron diffraction pattern of the home-made long silver nanowire.

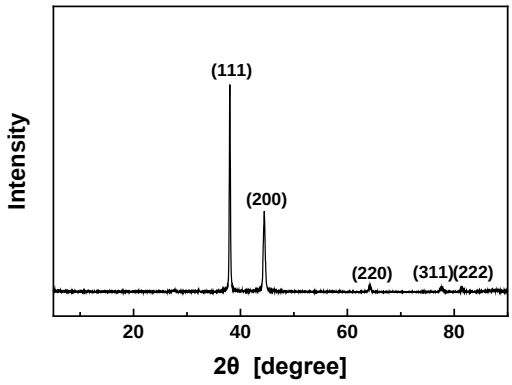

Fig. S2 WAXD pattern of the home-made long AgNWs.

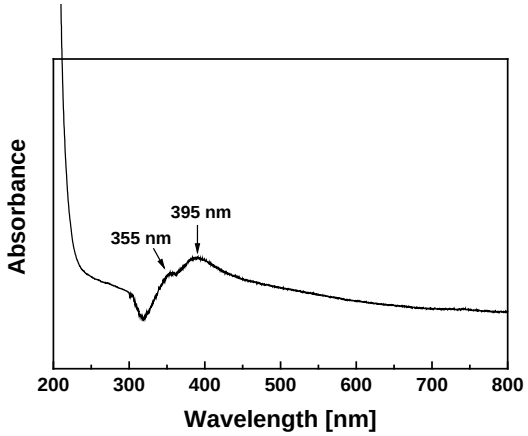

Fig. S3 UV-visible spectrum of the home-made long AgNWs.

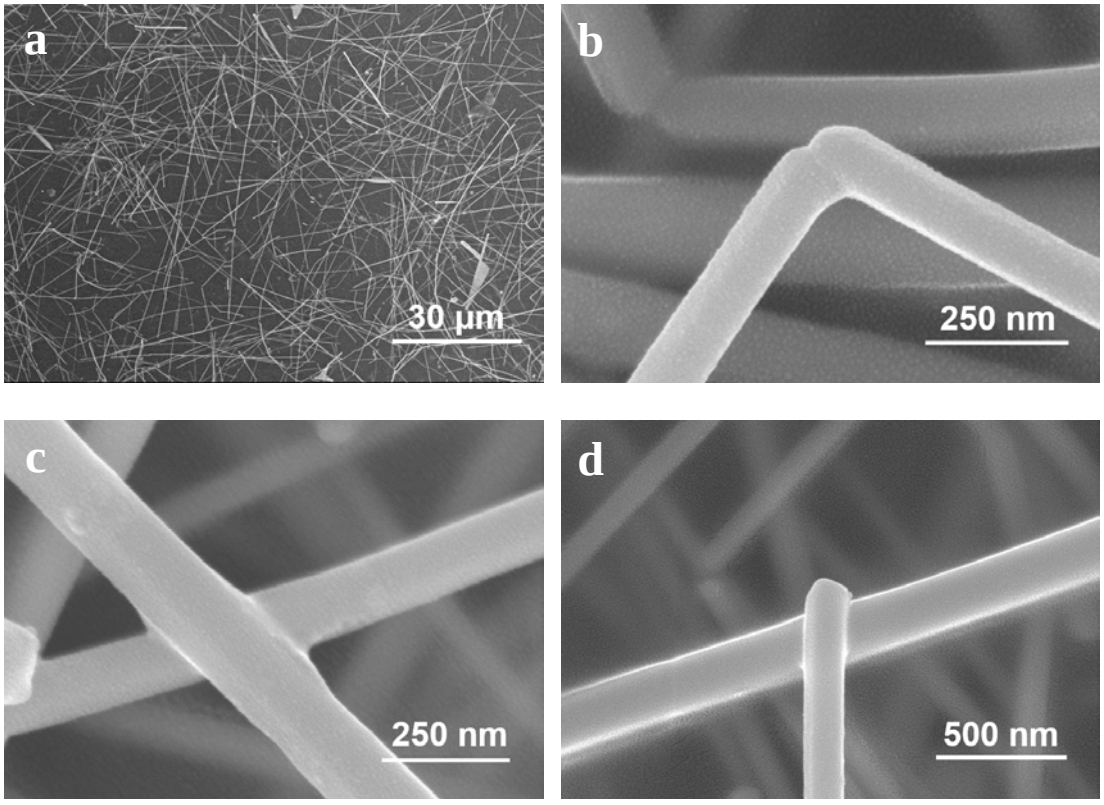

Fig. S4 (a) AgNWs dispersed on the PU substrate after spray-coating; (c-d) Welded AgNWs after treatment by argon plasma.

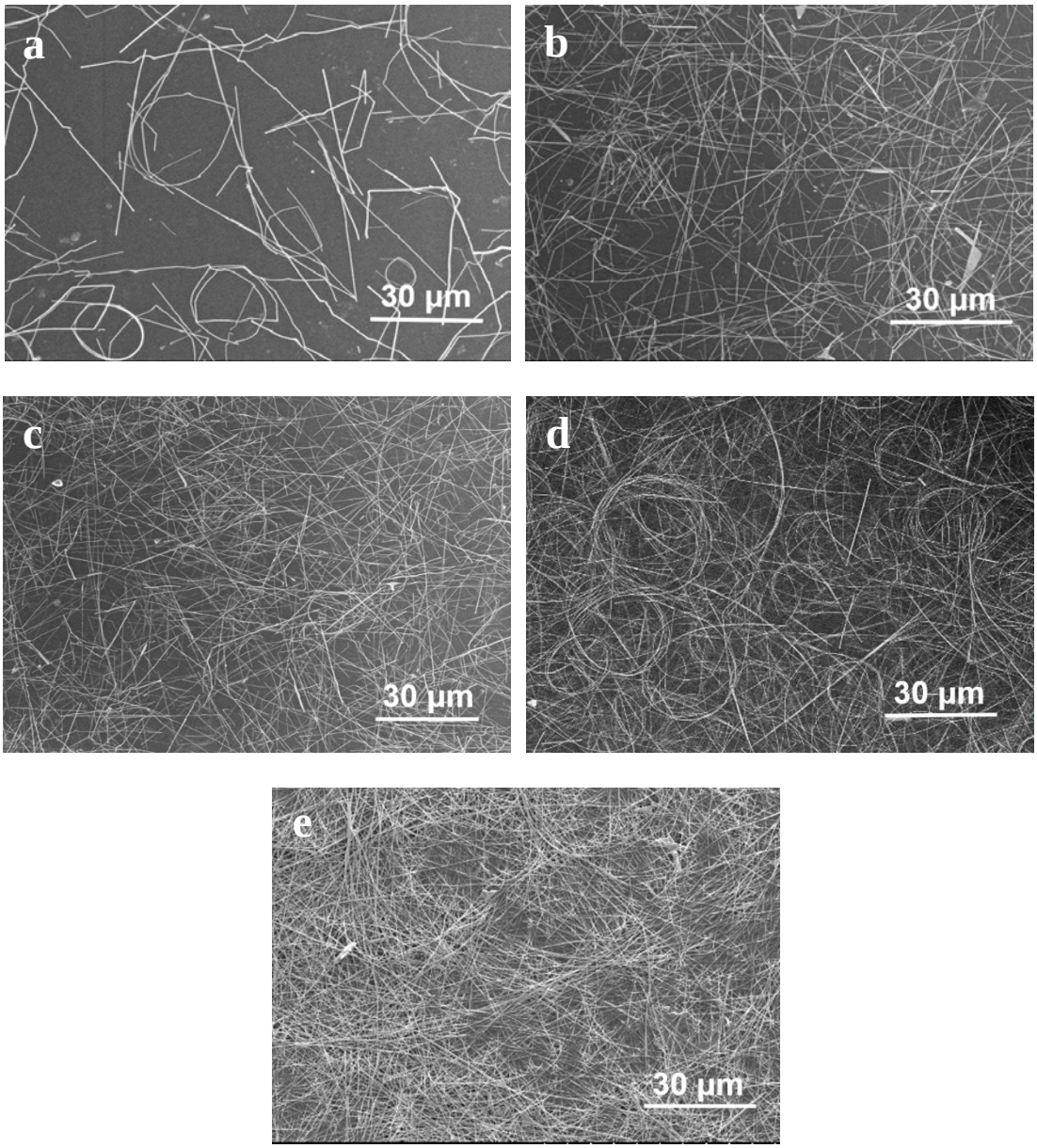

Fig. S5 SEM photos of AgNWs/PU composite films prepared by spray-coating. Note: concentrations of the dispersion of AgNWs in dichloromethane: (a) 3 mg/ml, (b, d, e) 6 mg/ml, and (c) 12 mg/ml. Spray-coating time(s): (a, b, c) once, (d) twice, and (e) thrice.

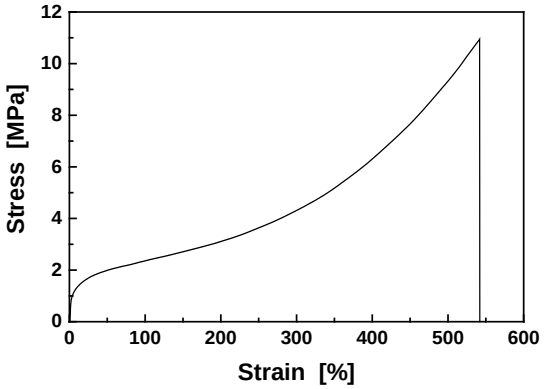

Fig. S6 Typical tensile stress-strain curve of PU/AgNWs/PU composite film. Note: concentration of AgNWs in the specimen = 6 mg/ml, single pass spray-coating.

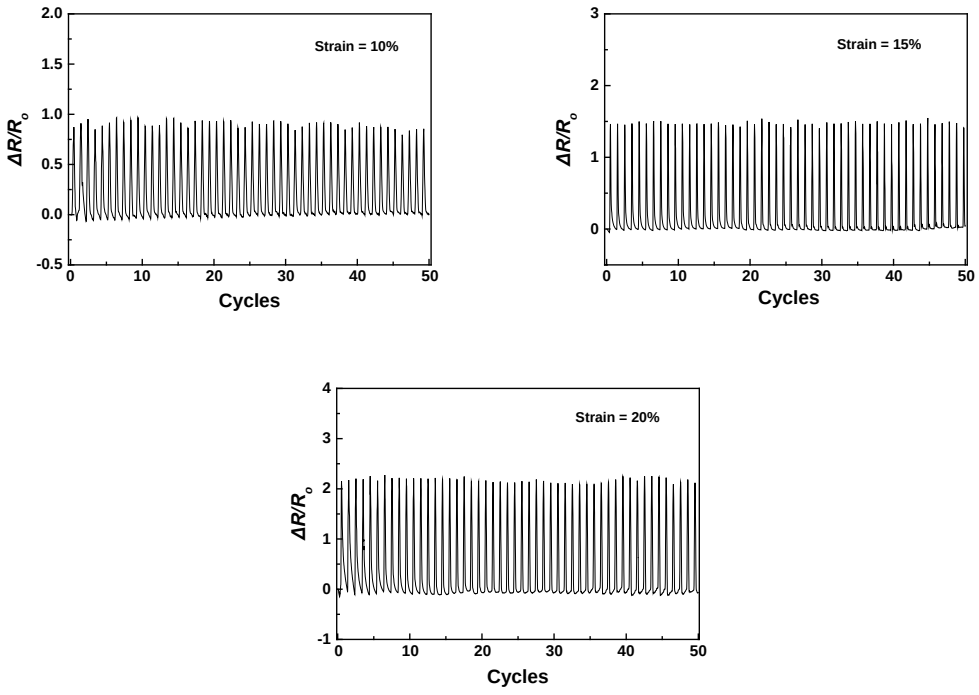

Fig. S7 Typical relative resistance changes of sandwiched PU/AgNWs/PU composite films measured under repeated loading-unloading cycles at different tensile strains. Note: concentration of AgNWs in the specimen = 6 mg/ml, single pass spray-coating.

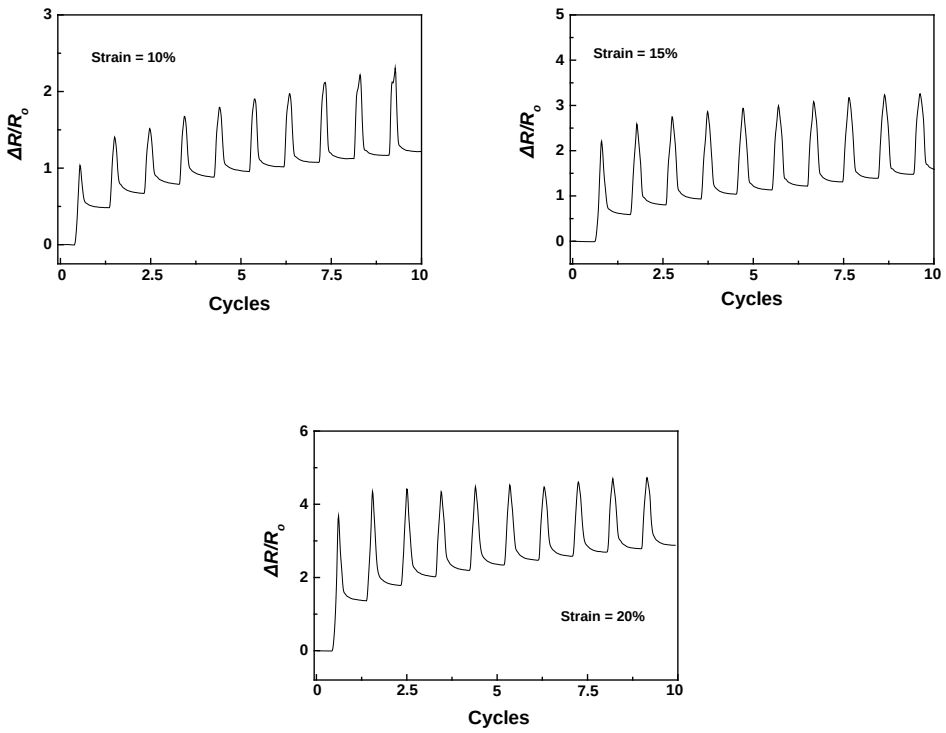

Fig. S8 Typical relative resistance changes of AgNWs/PU composite films measured under repeated loading-unloading cycles at different tensile strains. Note: concentration of AgNWs in the specimen = 6 mg/ml, single pass spray-coating.

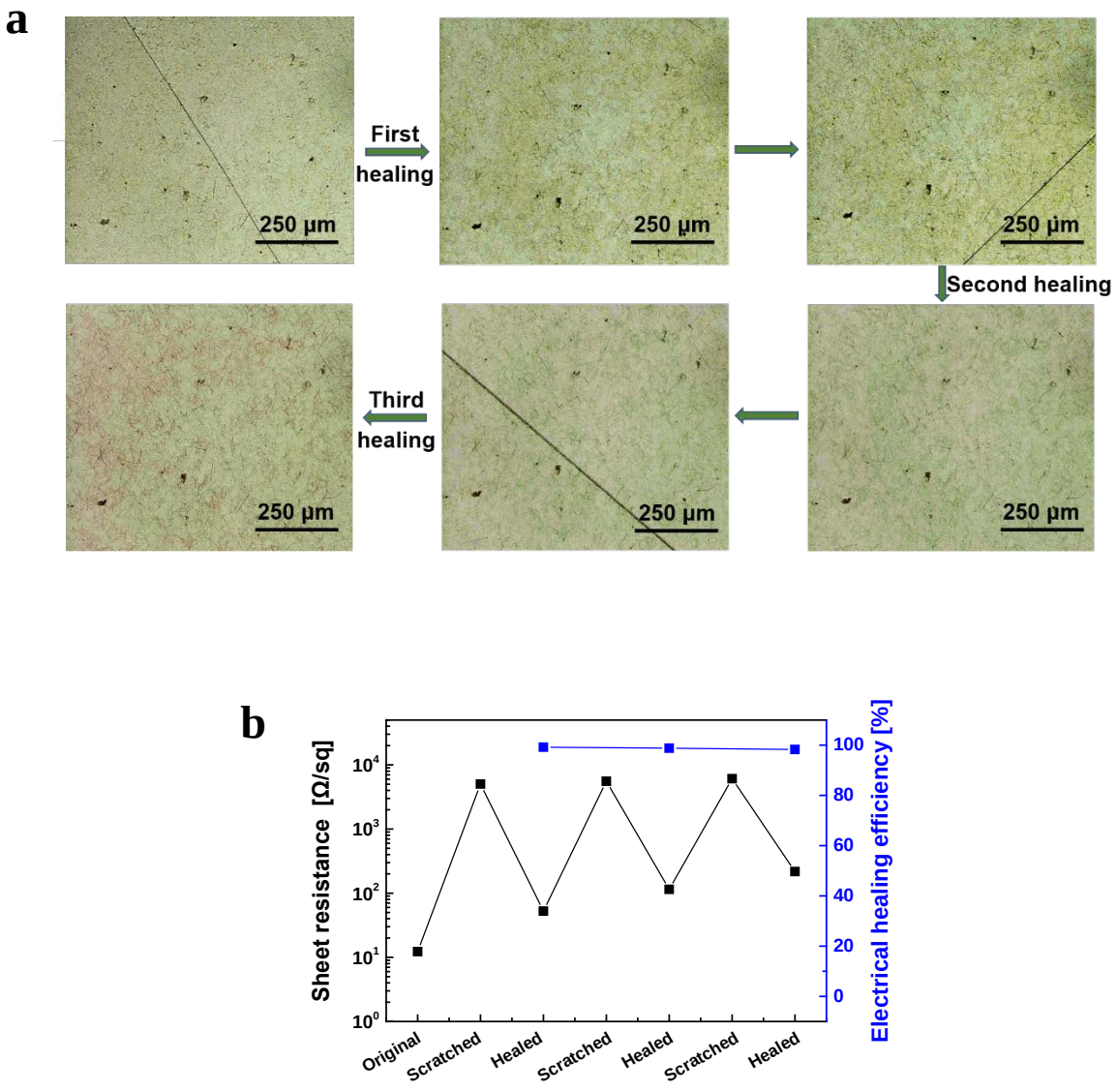

Fig. S9 (a) Optical photographs of three successive scratching/healing of the AgNWs/PU composite film. (b) Quantification of repeated sunlight driven self-healing of electrical conductivity of the scratched sandwiched AgNWs/PU composite film. Note: concentration of AgNWs in the specimen = 6 mg/ml, single pass spray-coating.