Electronic Supplementary Information

In Situ Synthesis of Silver Nanowires Gels and Their Super-Elastic Composite Foams

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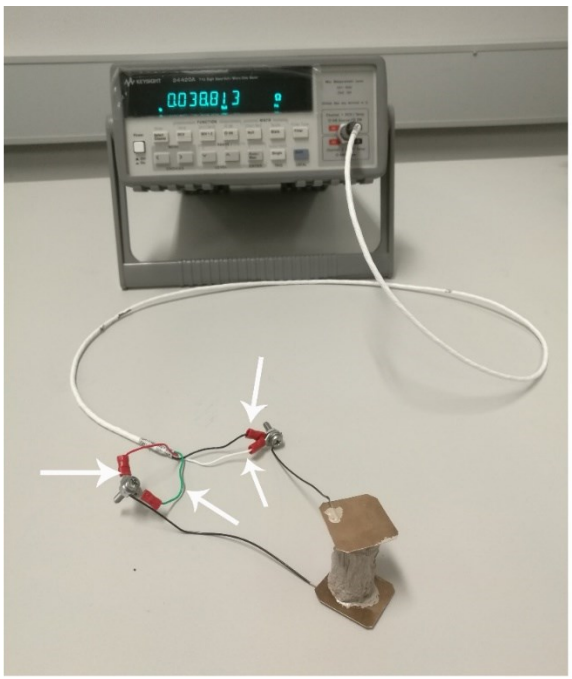


Figure S1. The electrical conductivities of AgNW aerogel and AgNW/PDMS aerogel were measured by a four-wire Kelvin method. To optimize the electrical contact, both ends of AgNW aerogel or aerogel composite were silver pasted to two pieces of flat copper foils. The four wires were then connected to the flat copper foils through two short wires. Then a high-sensitivity multimeter (Keysight 34420A. Nano Volt/Micro Ohm Meter) was used for resistance measurement.

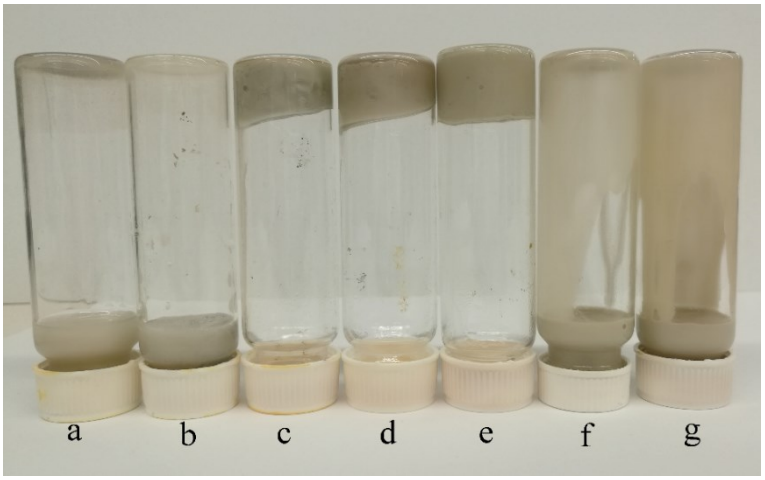


Figure S2. Photographs showing the synthesis of AgNW gels with different initial $AgNO_3$ concentration. (a) 7.2 mg/mL, (b) 10.7 mg/mL, (c) 14.3 mg/mL, (d) 21.5 mg/mL, (e) 28.6 mg/mL, (f) 35.8 mg/mL, (g) 57.2 mg/mL. For all samples, the weight ratio of $AgNO_3$ to PVP is fixed at 1.25.

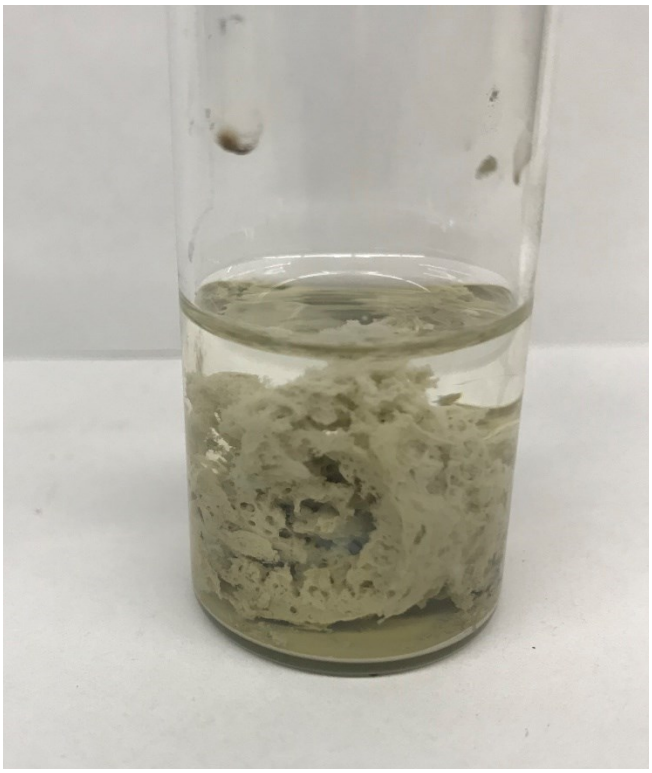
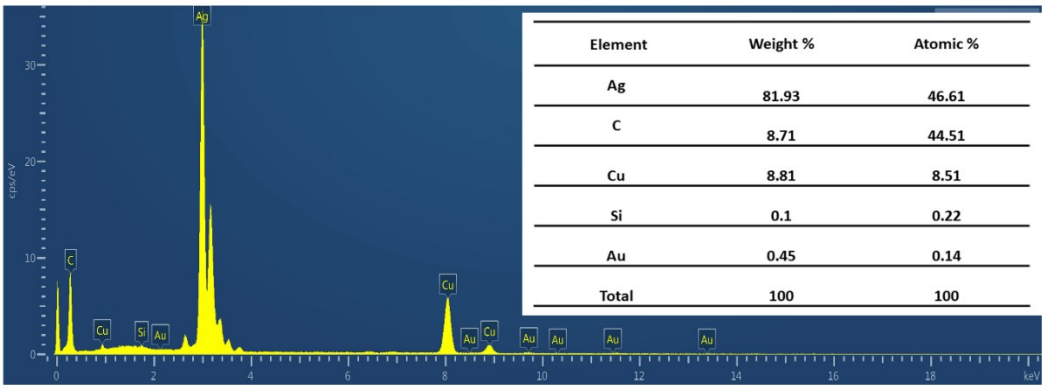


Figure S3. Photograph showing the synthesis of AgNW gel with initial $AgNO_3$ concentration of 28.6 mg/mL at 160 ^{o}C. No robust gel was obtained.



Element	Weight %	Atomic %
Ag	81.93	46.61
C	8.71	44.51
Cu	8.81	8.51
Si	0.1	0.22
Au	0.45	0.14
Total	100	100

Figure S4. TEM/EDX spectrum analysis of AgNWs. The inset table in spectrum shows the elemental composition of an individual AgNW.

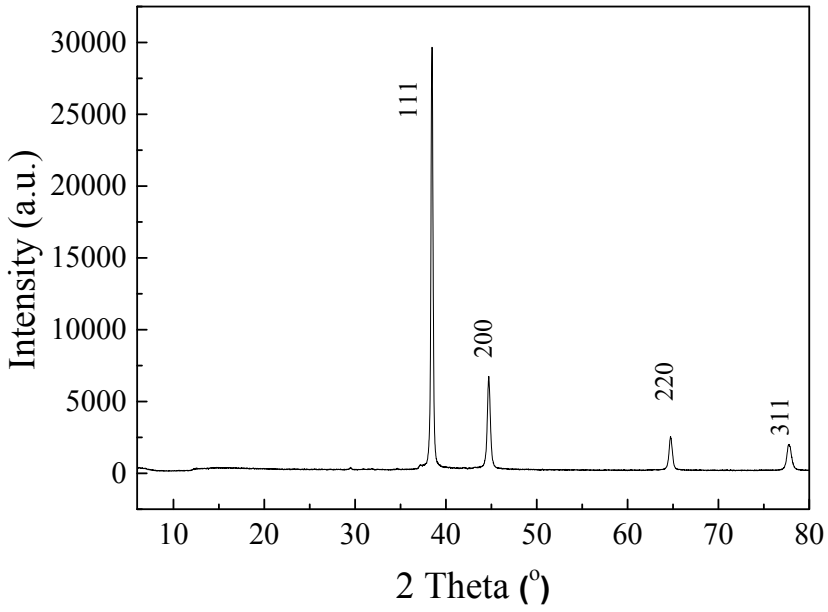


Figure S5. XRD pattern of the AgNW aerogels when exposed to air for 6 months.

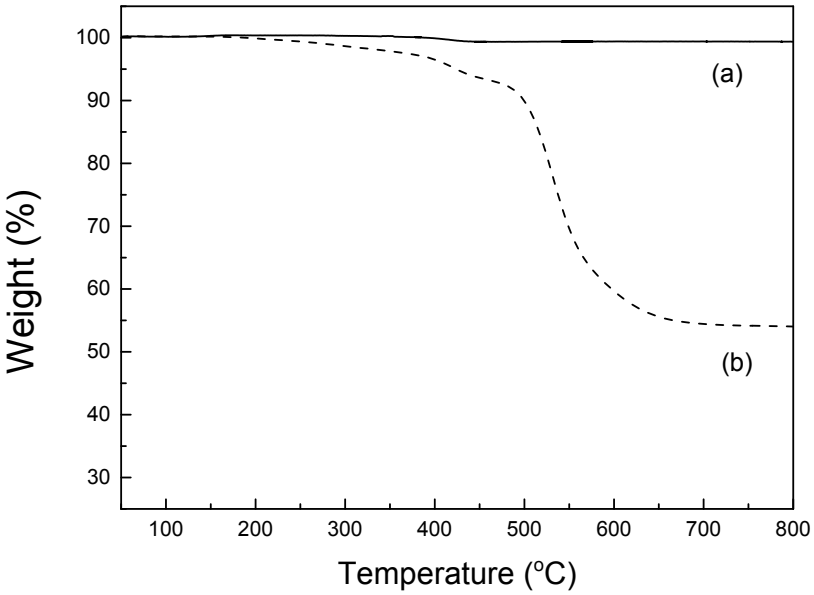


Figure S6. TGA curves of (a) AgNW aerogel and (b) AgNW/PDMS composite elastomer in nitrogen atmosphere. The heating rate was 10 °C/min.

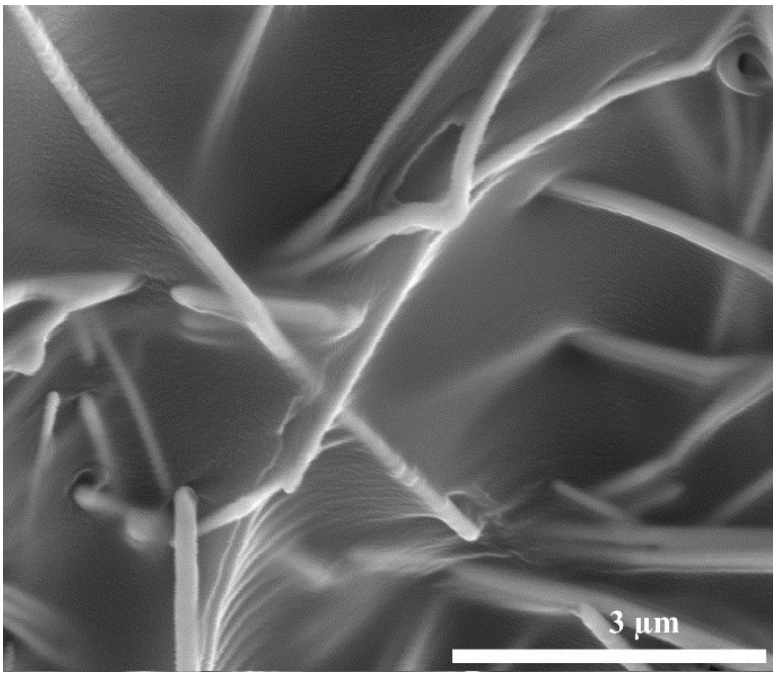


Figure S7. SEM image of AgNW/PDMS composite elastomer after 3 strain cycles.

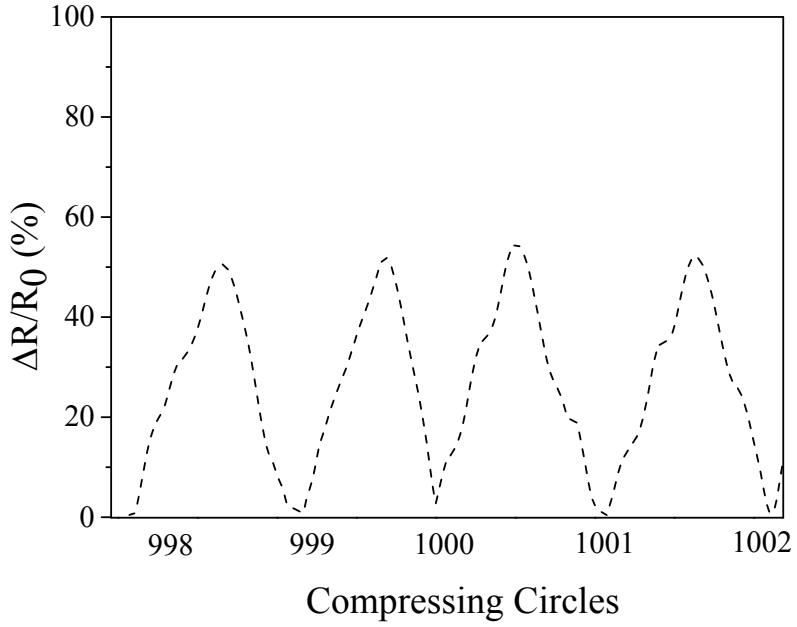


Figure S8. Electrical resistance change when repeatedly compressed at 1000 cycles.

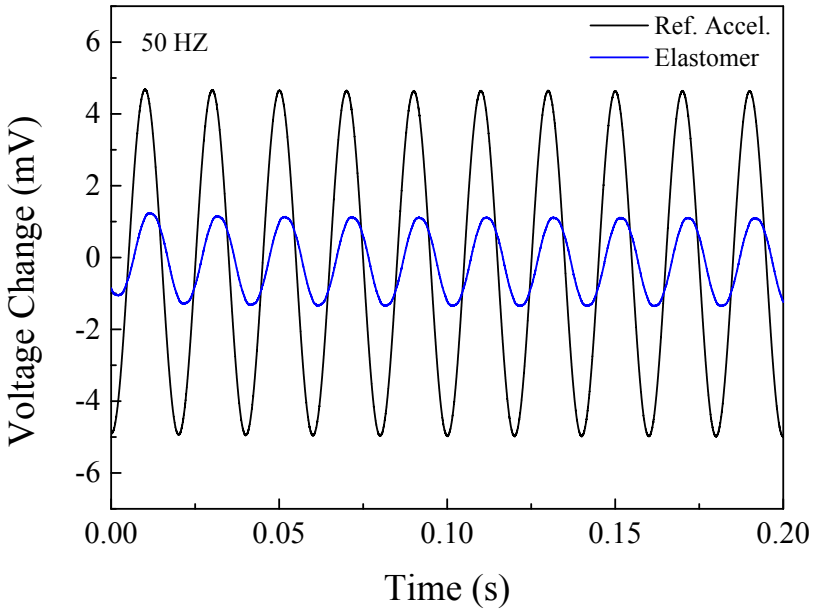


Figure S9. Dynamic piezoresistive response of AgNW/PDMS composites elastomer under a periodically sinusoidal excitation as a function of time. The loading frequency was 50 Hz. The blue curve represents AgNW/PDMS elastomer, and the black curve represents the commercial accelerometer.