Supporting Information

Highly conductive silver nanoparticles functionalized aramid fiber paper for electric heaters with rapid response and chemical stability

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1. SEM images and EDS results of pristine AFP and plasma-treated AFP

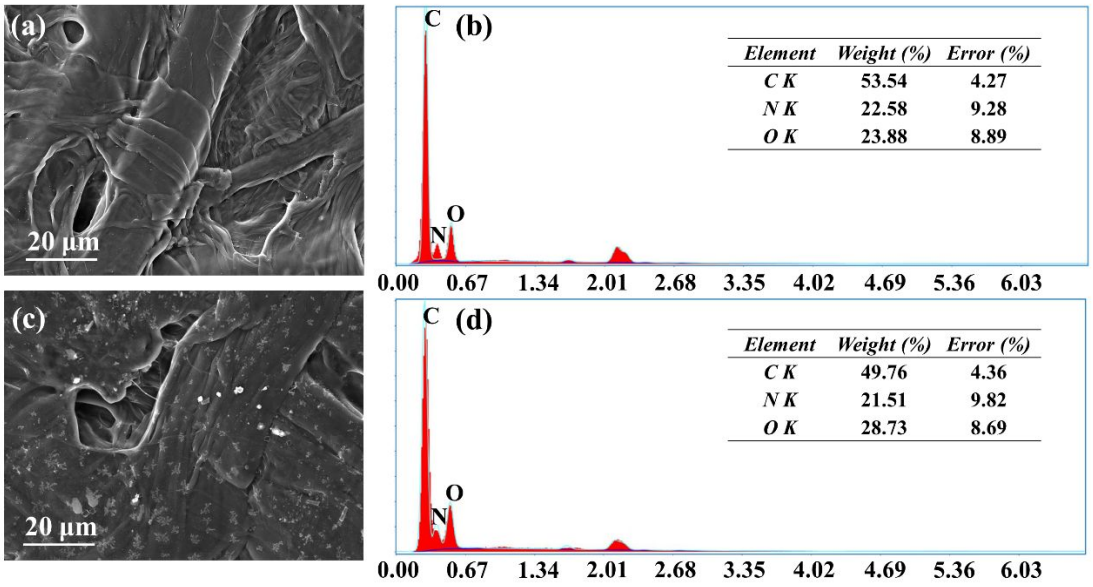

Figure S1. SEM images and EDS results of pristine AFP (a, b) and plasma-treated AFP (c, d).

2. XPS spectra of N 1s and O1s peaks for pristine AFP and plasma-treated AFP

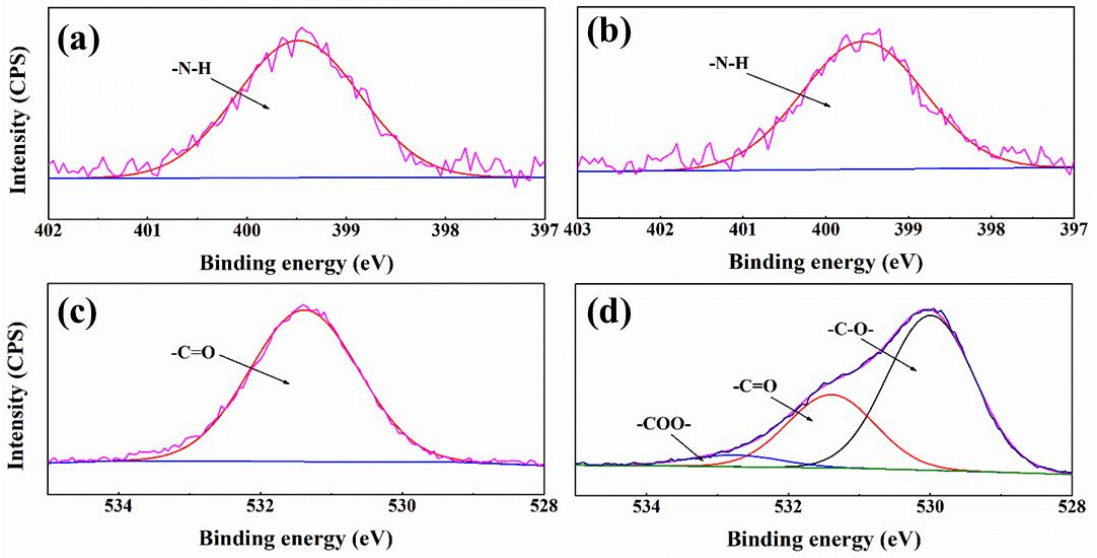

Figure S2. The XPS spectra of N 1s peaks for pristine AFP (a) and plasma-treated AFP (b); XPS spectra of O 1s peaks for pristine AFP (c) and plasma-treated AFP (d).

3. AgNPs-coated AFP without plasma treatment

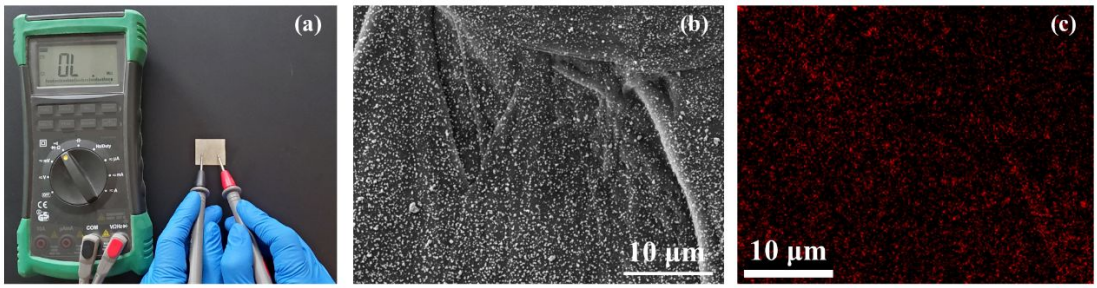

Figure S3. The electrical resistance of AgNPs-coated AFP without plasma treatment (a); SEM image (b) and EDS mapping (c) of AgNPs-coated AFP without plasma treatment.

4. SEM and EDS Mapping of Silver-coated AFP

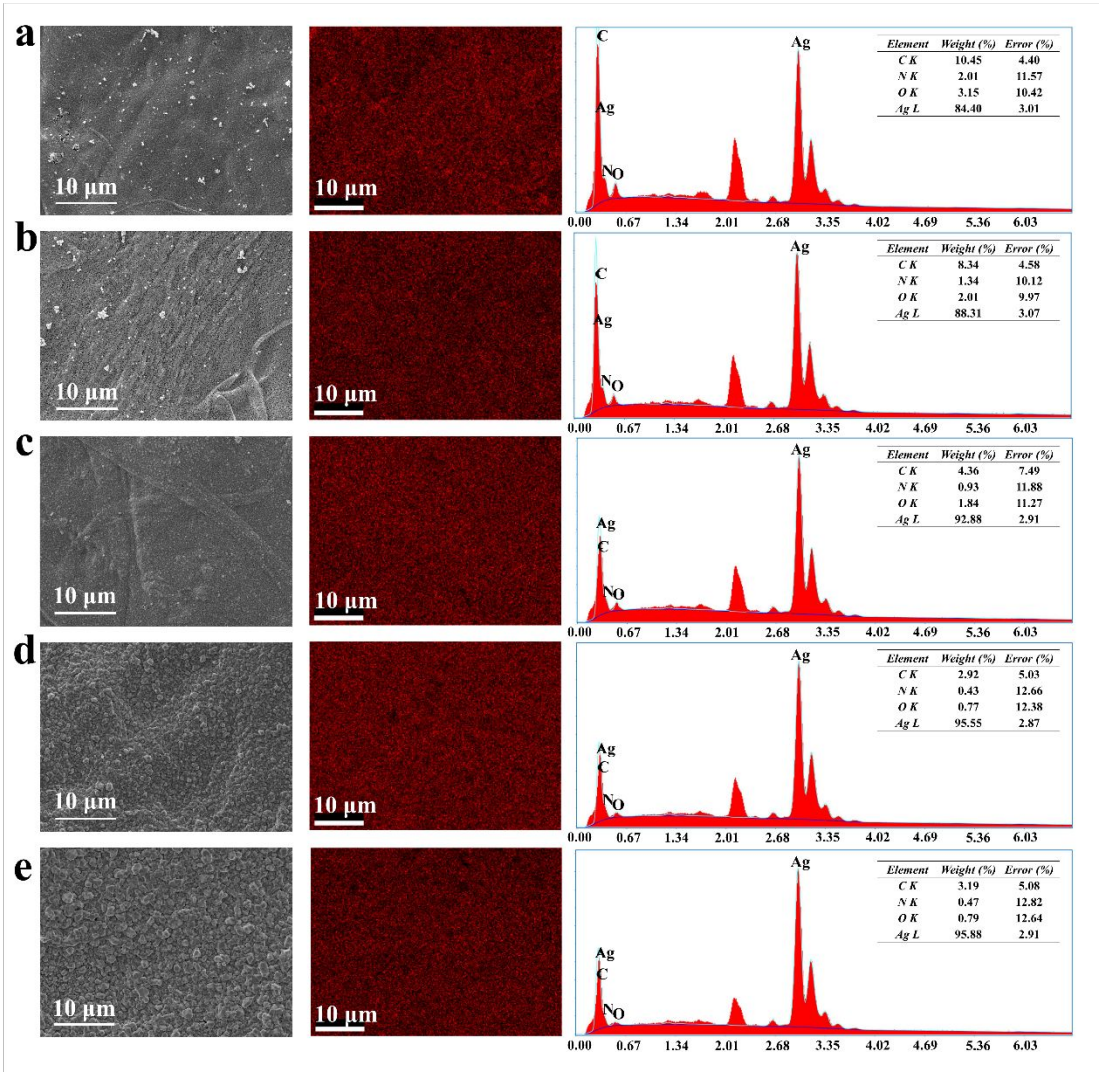

Figure S4. SEM images and EDS mapping of AFP/AgNPs prepared at $AgNO_3$ concentration of 5 (a), 10 (b), 15 (c), 20 (d) and 30 (e) g/L.

5. Heating repeatability and long-term stability of electrical heaters after being soaked in acid/alkali solutions and various organic solvents

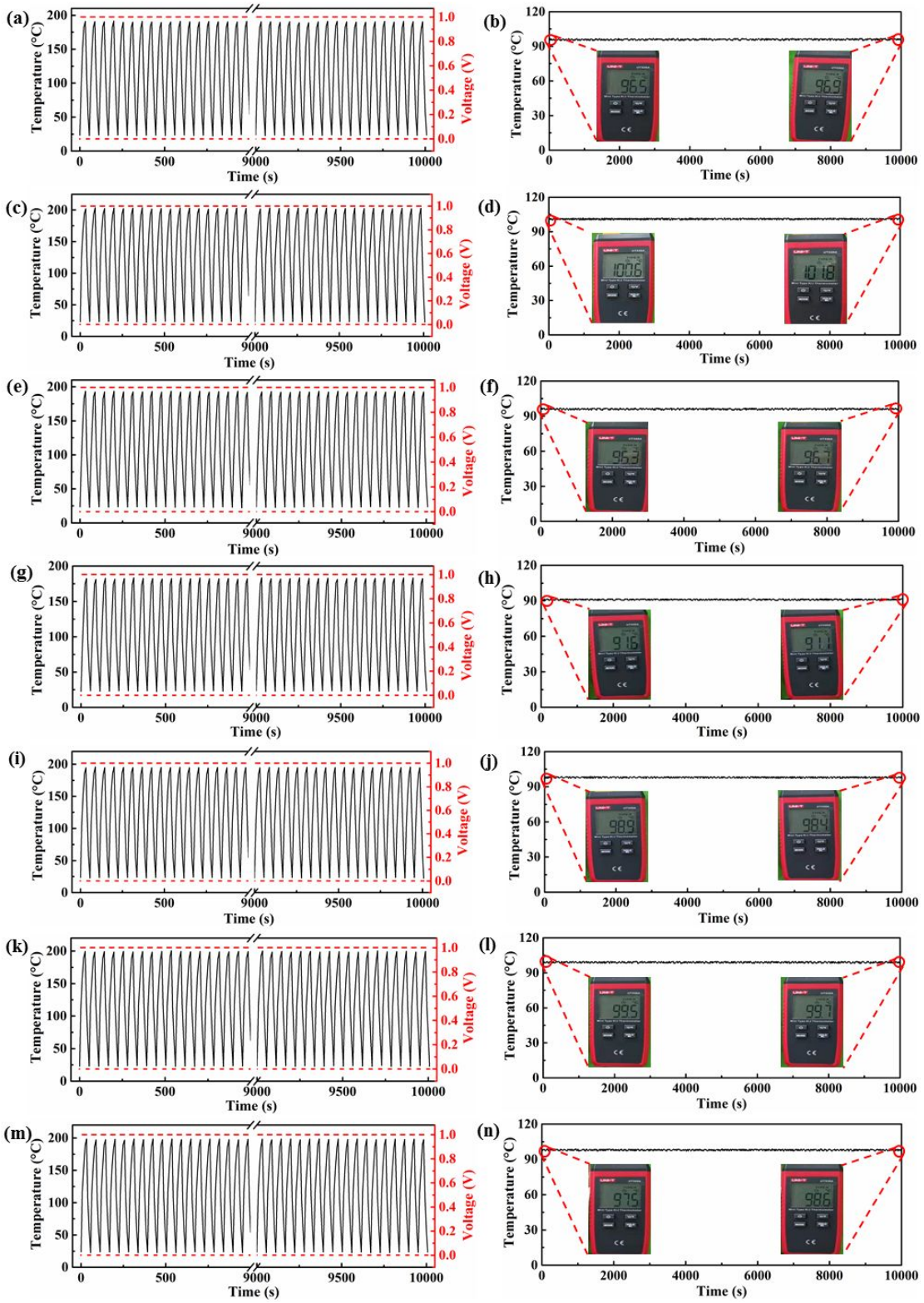

Figure S5. The heating repeatability under pulse voltage of 0V/ 1V for AFP/AgNPs-15 electrical heater after being soaked in pH 2.0 (a), pH 7.0 (c), pH 12.0 (e) solution, ethanol (g), acetone (i), N-heptane (k) and xylene (m) for 3 days; the long-term stability under a constant voltage of 0.5 V for AFP/AgNPs-15 electrical heater after being

soaked in pH 2.0 (b), pH 7.0 (d), pH 12.0 (f) solution, ethanol (h), acetone (j), N-heptane (l) and xylene (n) for 3 days.

6. SEM image of AFP/AgNPs-15 after being immersed in acid/alkali solutions and various organic solvents

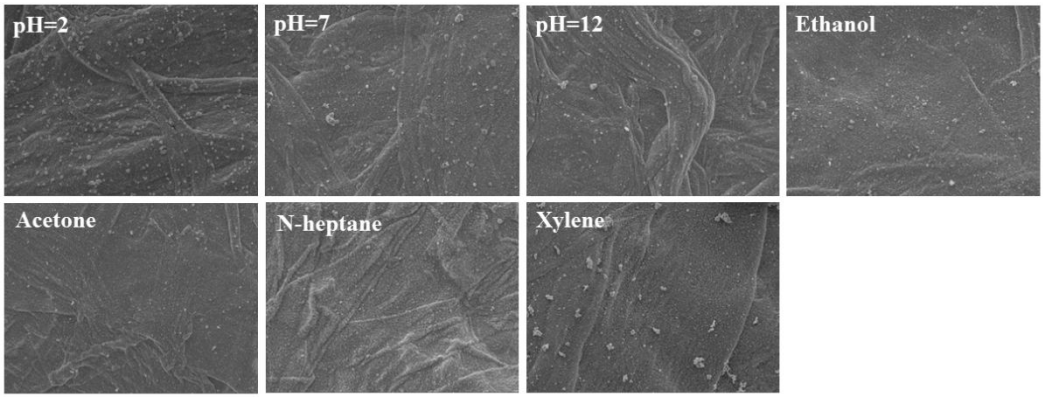

Figure S6. SEM image of AFP/AgNPs-15 after being immersed in acid solution (pH = 2), neutral aqueous solution (pH = 7), alkali solution (pH = 12), ethanol, acetone, N-heptane and xylene for 3 days.