

## Supporting information

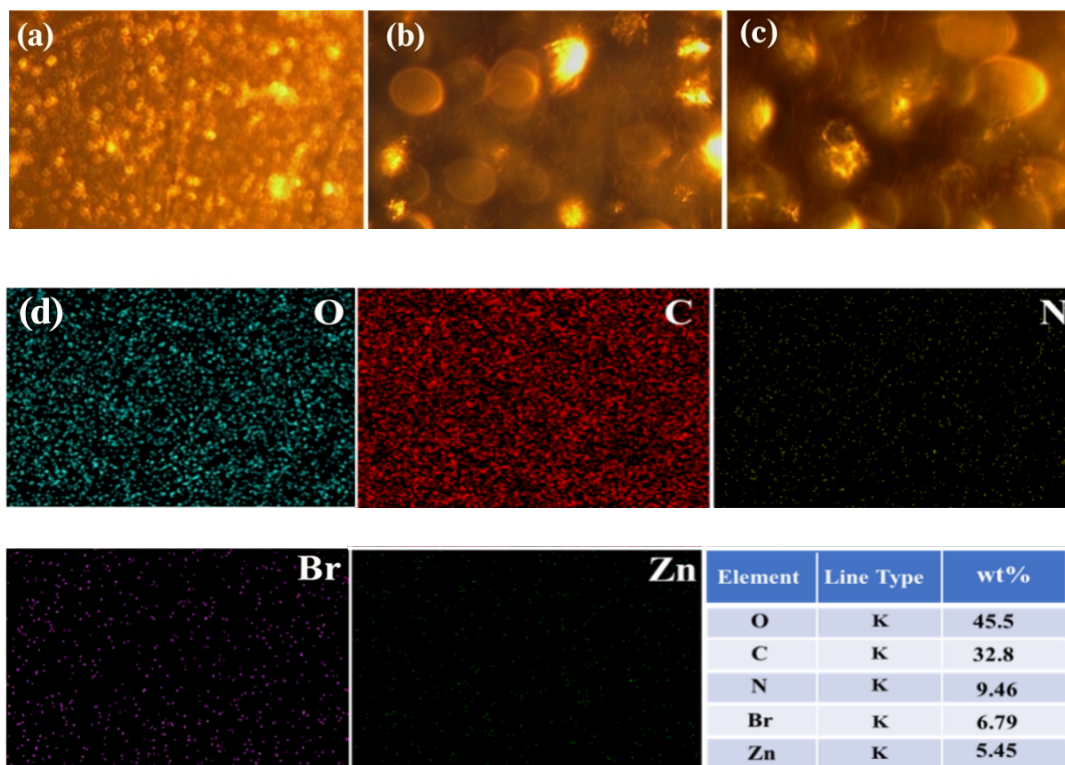


Figure S1. Optical microscopy images of MS in water(a) and hydrogel G (b, c); EDS elemental mapping of hydrogel G(d).

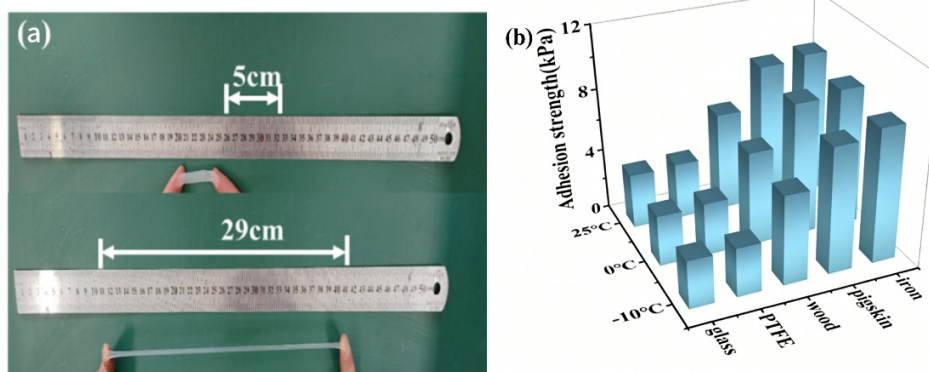


Figure S2. Self-adhesion and stretching of the hydrogel by fingers after storage at -10 °C for 24 h (a); Adhesion strength of the hydrogel on different substrates at various temperatures (b)

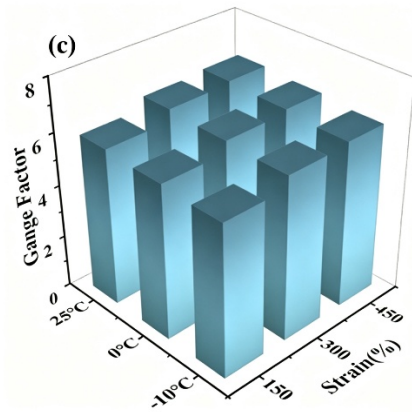
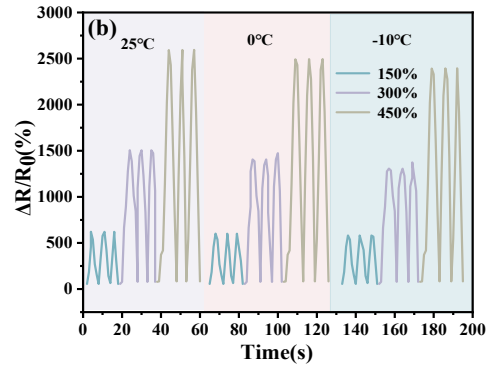
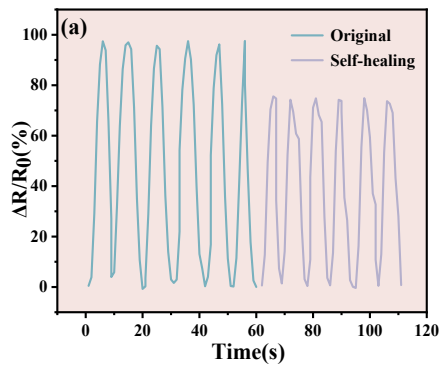


Figure S3. Relative resistance changes before and after self-healing (a); Relative resistance changes (b) and GF values (c) of the hydrogel sensor at different temperatures