

Electronic Supplementary Information (ESI) for RSC Advances

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Supporting Information

Nature-inspired preparation of self-adhesive, frost-resistant, and ion-conductive hydrogels for flexible strain sensors

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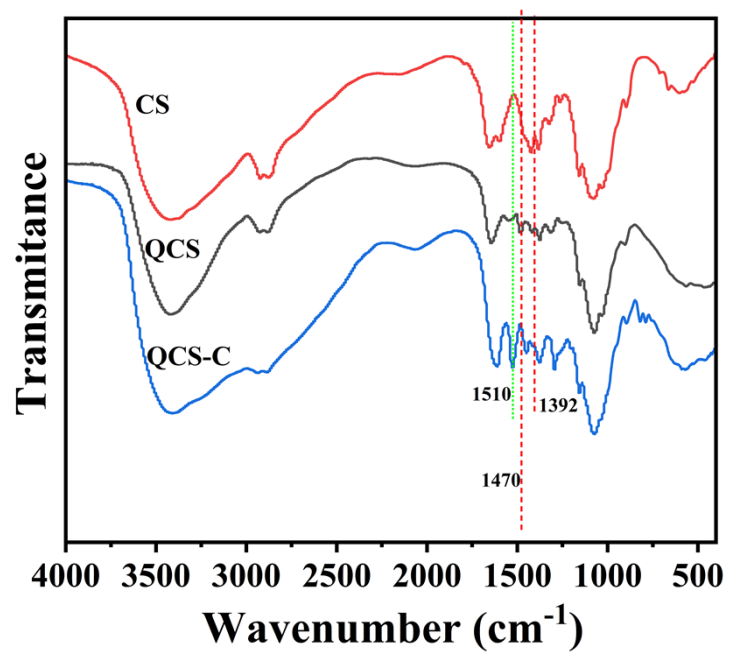


Fig. S1 FT-IR spectra of CS, QCS and QCS-C.

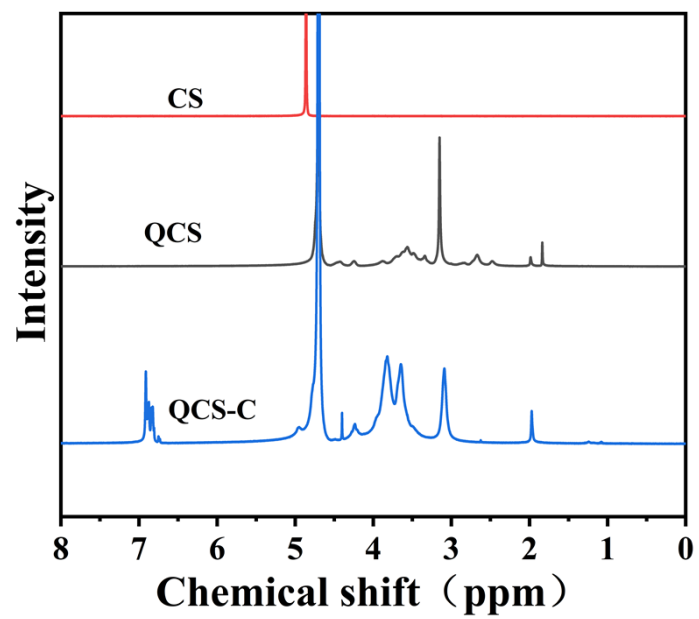


Fig. S2 ¹H-NMR spectra of CS, QCS and QCS-C.

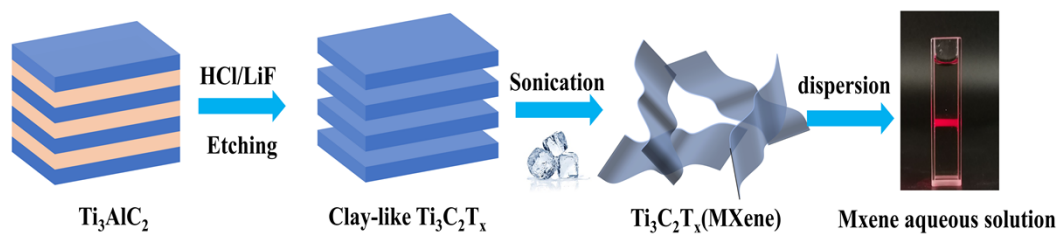


Fig. S3 Synthesis and dispersion of MXene nanosheets.

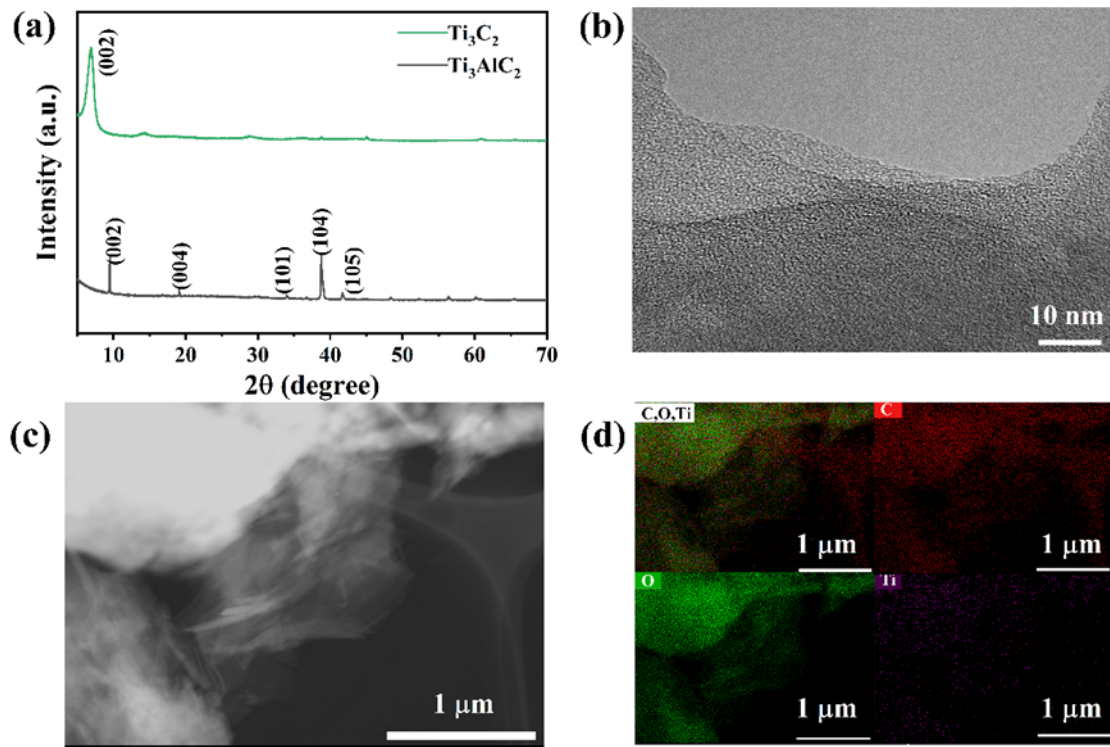


Fig. S4 (a) XRD patterns of MAX and MXene nanosheets, (b) High resolution TEM image of MXene nanosheets, (c) TEM image of MXene nanosheets, (d) EDS images of (c).

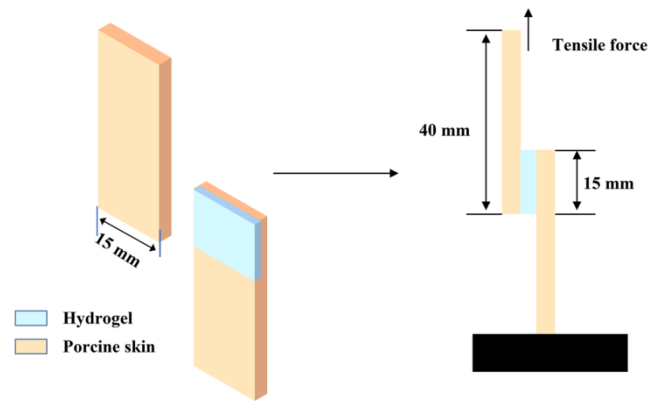


Fig. S5 Schematic diagram of adhesion experiment (taking porcine skin as an example).

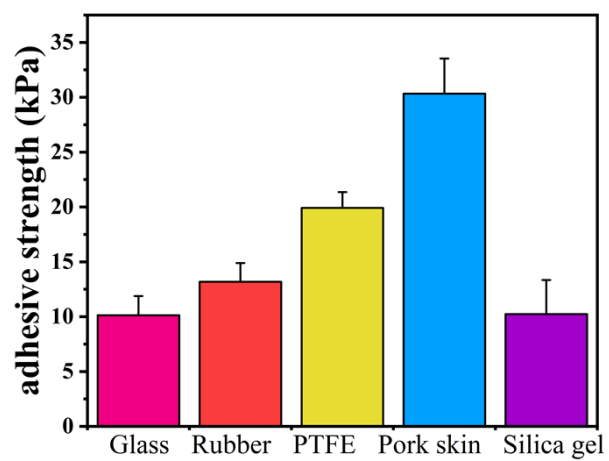


Fig.S6 Adhesion properties of the hydrogel on the surface of different substrates.

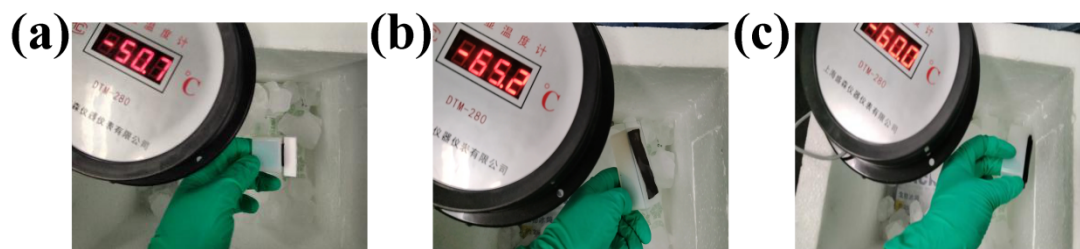


Fig. S7 Diagram of adhesion performance of the hydrogel in low temperature box. (a) PTFE, (b) glass, (c) rubber.

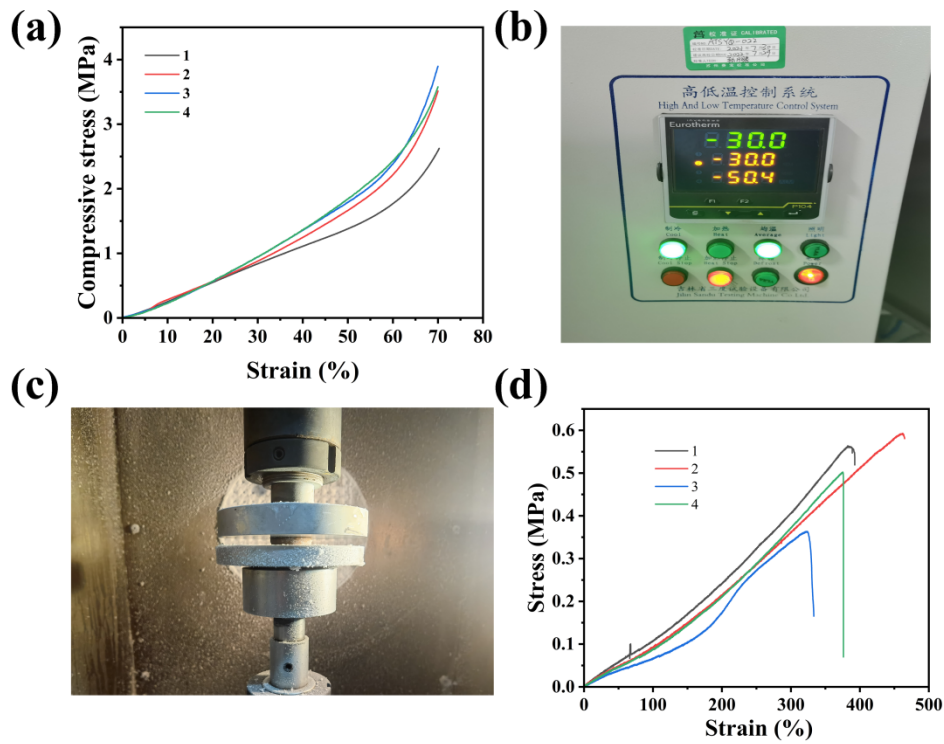


Fig. S8 Mechanical strength of the hydrogel at low temperature. (a) Compressive strain–stress curves of the hydrogel at -30°C . (b) Temperature control system. (c) The hydrogel was compressed at -30°C . (d) The tensile strain–stress curves of the hydrogel at -30°C .

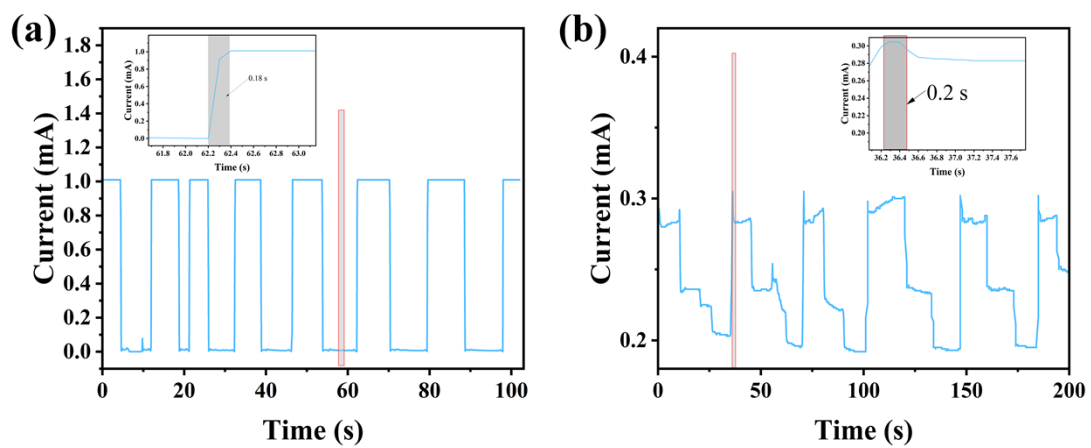


Fig. S9 (a) Response time at room temperature, (b) Response time at low temperature.

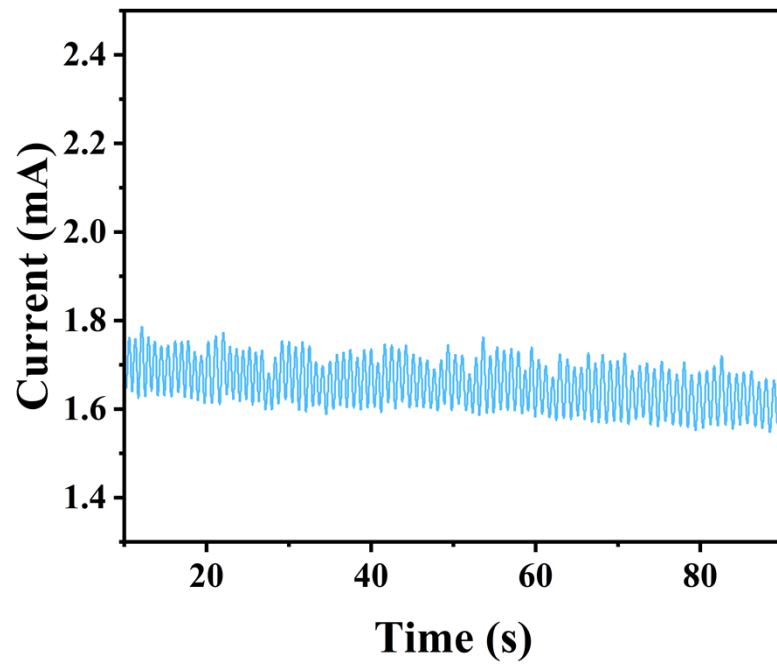


Fig. S10 Rapid bending of index finger for many times.