Supplementary Information (SI) for Nanoscale.

Supporting Information

Super-Stretchable, Freezing-Resistant and Self-Powered Organohydrogel for Extreme Environment-Adaptable High Performance Strain Sensors

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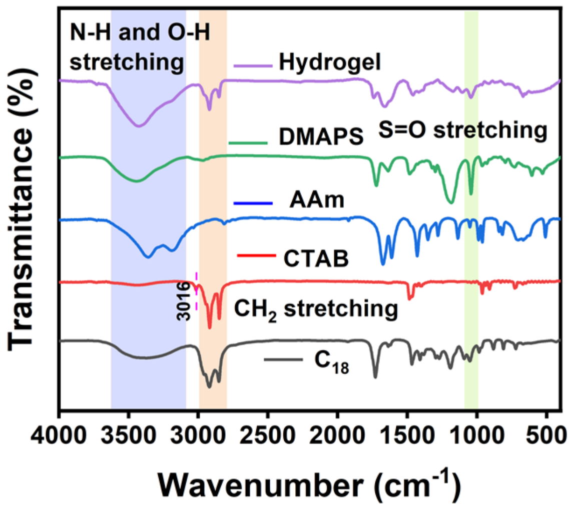

Fig. S1. Fourier infrared spectra of HADP organohydrogels.

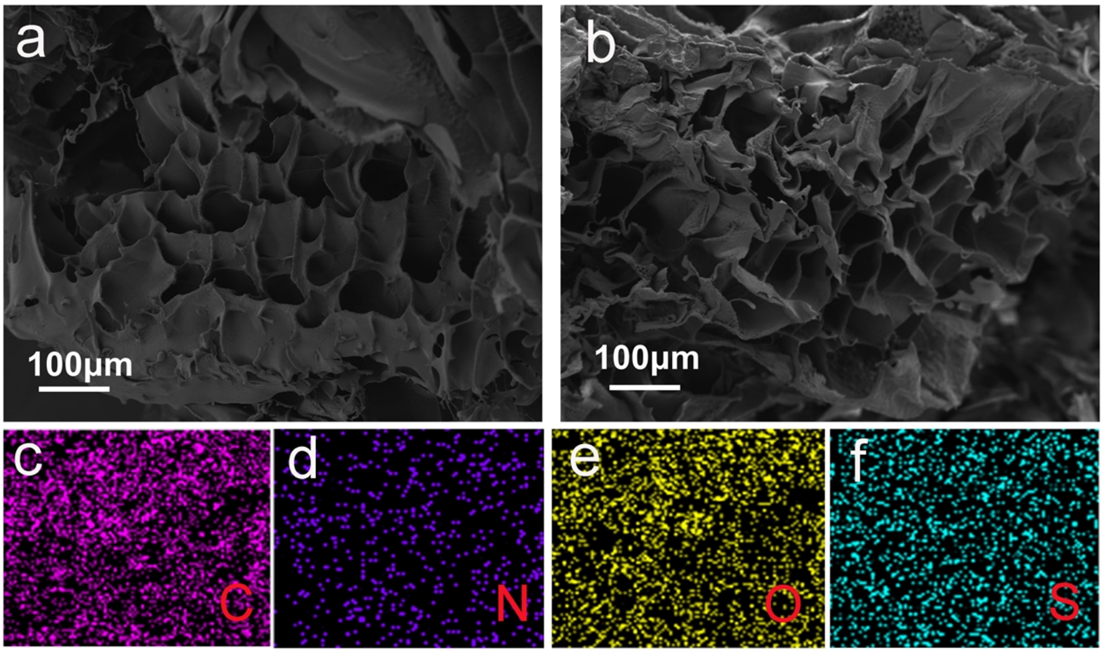

Fig. S2. (a-b) Sweeping electron micrographs of HADP organohydrogels and corresponding (c-f) mapping images.

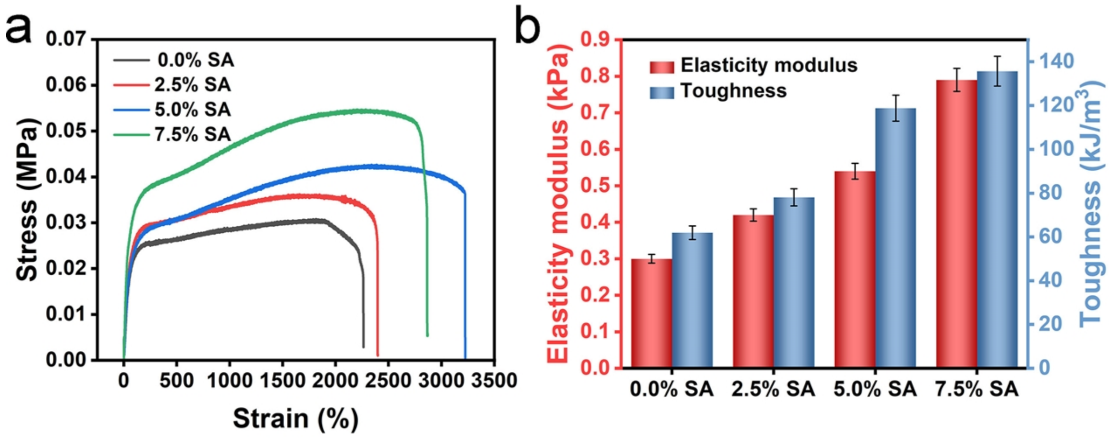

Fig. S3. (a) Tensile stress-strain curves of hydrogels with different SA contents formed without the addition of the cross-linking agent PEGDA and only by physical cross-linking are shown, along with the corresponding (b) toughness and elastic modulus.

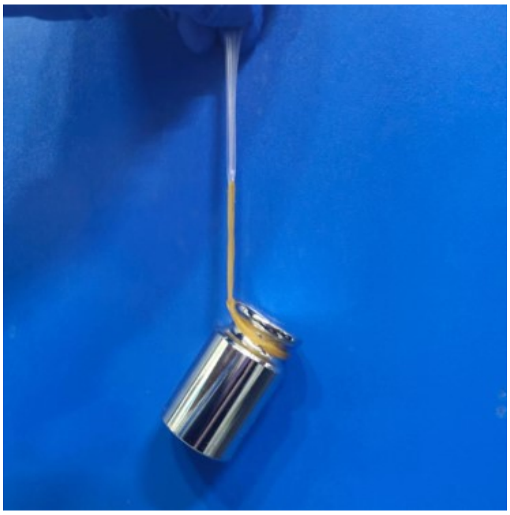

Fig. S4. Experimental image of HADP organohydrogel successfully lifting 200g weight.

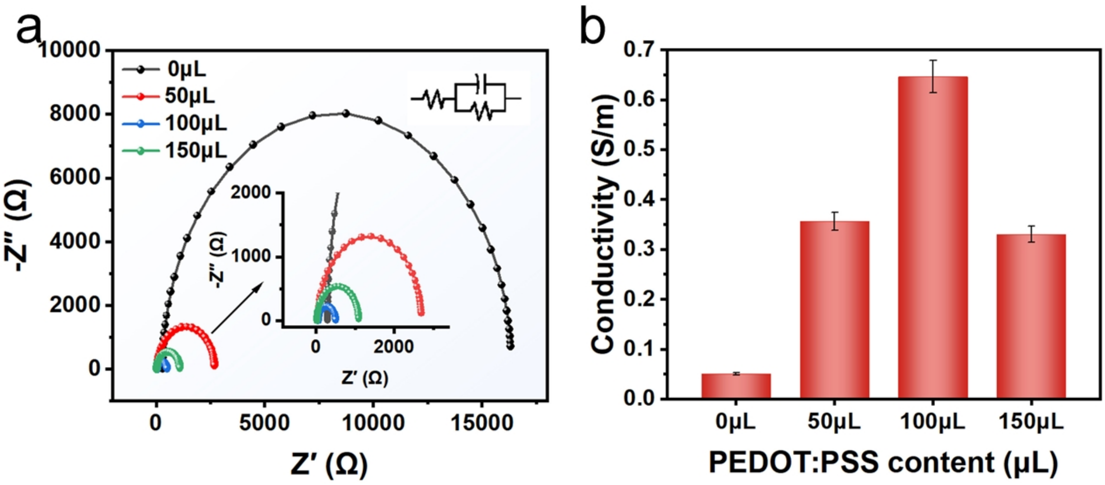

Fig. S5. (a) Electrochemical impedance (EIS) of hydrogels with different PEDOT: PSS contents and the corresponding (b) electrical conductivity.

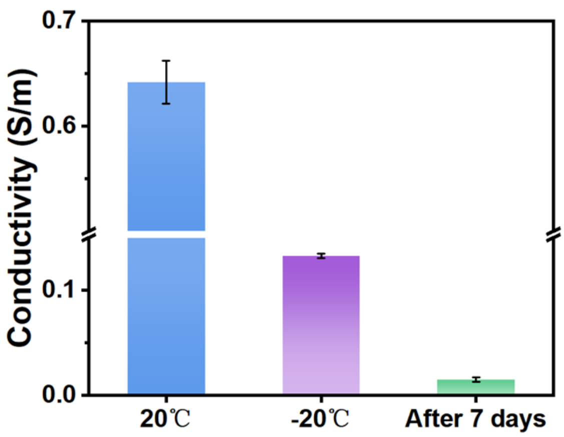

Figure S6. Conductivity of HADP hydrogel at 20°C, -20°C and after 7 days in room temperature environment

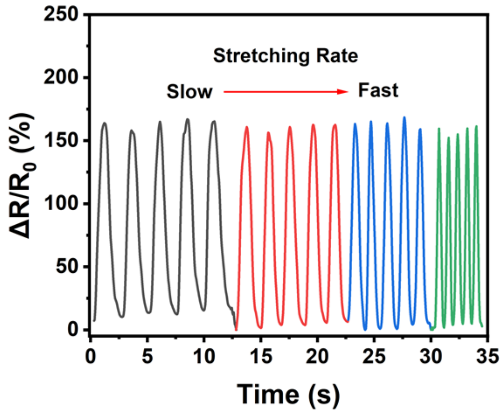

Fig. S7. Relative resistance variation of organohydrogel sensors under 75% strain at different tensile rates

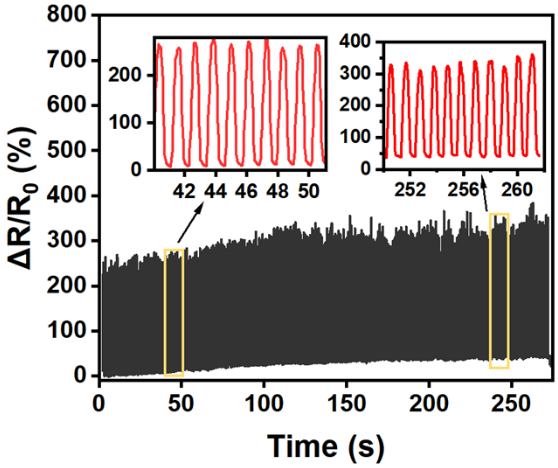

Figure S8. 300 Cycle stability test of organohydrogel sensor at 100% tensile strain.

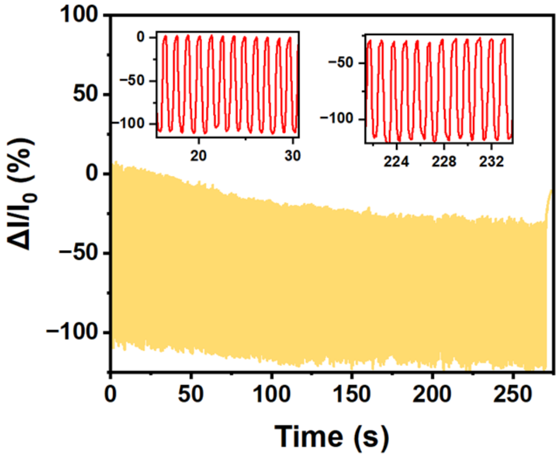

Figure S9. Stability test of organohydrogel self-powered battery sensors at 100% tensile strain for 300 cycles

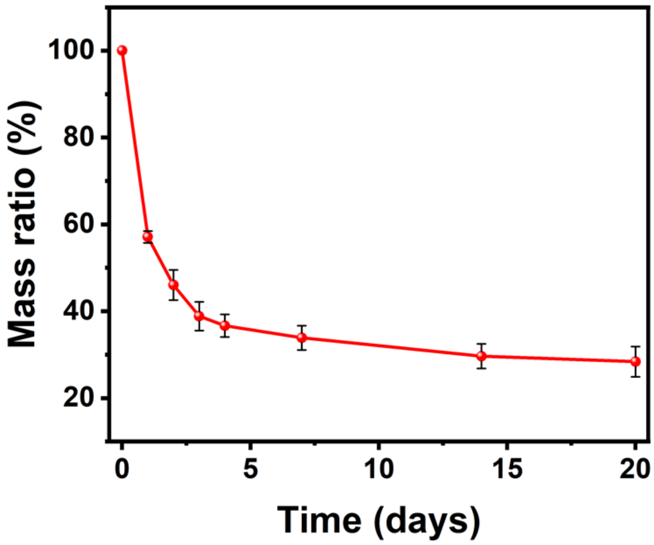

Figure S10. Residual mass rate of HADP organohydrogels after 20 days of degradation in PBS solution

Table S1. The stress, strain and low temperature resistance of the prepared organohydrogels were compared with those reported.

Hydrogel sensors	Solvent	Strain (%)	Stress (MPa)	Frost resistance (℃)	Reference
PVA-GA/P(AA-co-AM)	Gly-H_2O	2000	0.3	-20	[1]
Poly(AA-coAM)/AP	Gly-H_2O	1089	0.2	-20	[2]
PAM/montmorillonite/CNT	Gly-H_2O	4400	0.17	-60	[3]
TA@CNF/MXene/PAM	Gly-H_2O	1500	0.156	-36	[4]
PAMPS/PAAm	DMSO-H_2O	370	0.22	-57.4	[5]
PVA-PAM	EG-H_2O	225	0.16	-50	[6]
HADP	Gly-H_2O	5300	0.23	-70	This work

References

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