Supporting information

Highly conductive hydrogel sensor driven by amylose with freezing and dehydration resistance

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TableS1. Recipes of all hydrogel samples

Hydrogels	PVA (g)	NaCl (g)	Amylose (g)	Glycerol (mL)	Deionized water (mL)	water contents （%）
PVA-NaCl	6.5	2	0	0	40	100%
PVA-NaCl-GL	6.5	2	0	12	28	70%
PVA-NaCl-GL-AMY-1%	6.5	2	0.4	12	28	70%
PVA-NaCl-GL-AMY-2%	6.5	2	0.8	12	28	70%
PVA-NaCl-GL-AMY-3%	6.5	2	1.2	12	28	70%
PVA-NaCl-AMY	6.5	2	1.2	0	40	100%
PVA-NaCl-GL-15%-AMY	6.5	2	1.2	6	34	85%
PVA-NaCl-GL-30%-AMY	6.5	2	1.2	12	28	70%

Table S2. Comparison of the hydrogel with the other hydrogels in the available literature

Hydrogel	Stress (kPa)	Strain (%)	Sensitivity (GF)	Anti-drying (%)	Anti- freezing (°C)	References
MCT-fabric	-	210	9022	-	-	42
AgNW/CNF hybrid nanopaper	68700	1.87	0.24	-	-	43
PINF/MXene composite aerogel.	85.21	90	1.67	-	-50	44
superhydrophobic conductive MXene/paper	-	-	17.4	superhydrophobic	-	45
Amy/(PAAm-AAc) hydrogels	100	1100	6.93	-	-	46
HPMC-g-AN/ AM0.6-ZnCl2−25% hydrogel	160	1730	-	-	-	47
Gel-C5 hydrogel	41	436	5.9	-	-	48
PVA-NaCl-GL-AMY hydrogel	1377	706	2.55	85	-20	This work

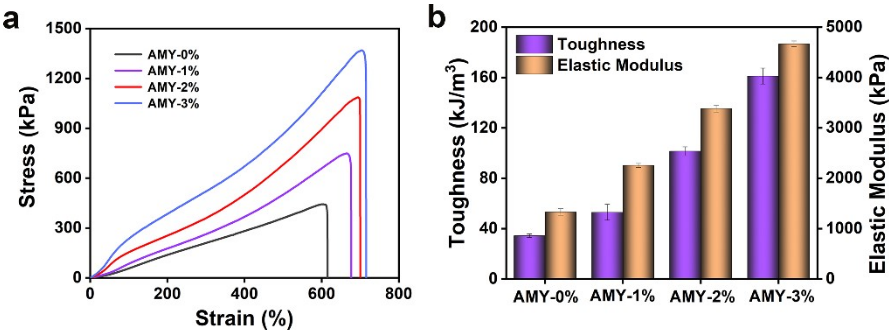

Figure S1. a) Tensile curves of hydrogel with diverse amylose contents; b) the influence of amylose contents on the elastic modulus and toughness for hydrogels.

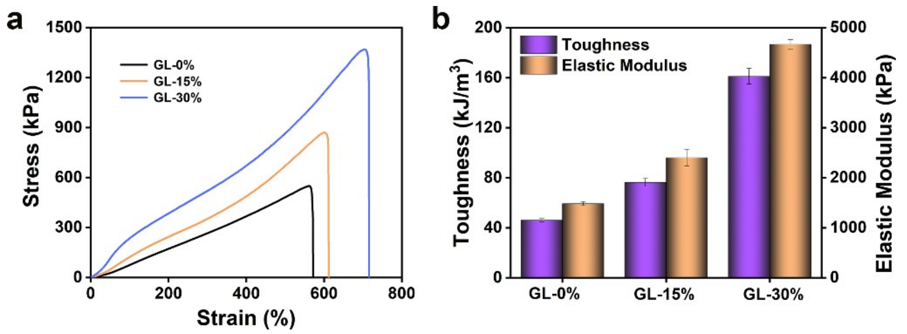

Figure S2. a) Tensile curves of hydrogel with diverse glycerol contents; b) the influence of glycerol contents on the elastic modulus and toughness for hydrogels.

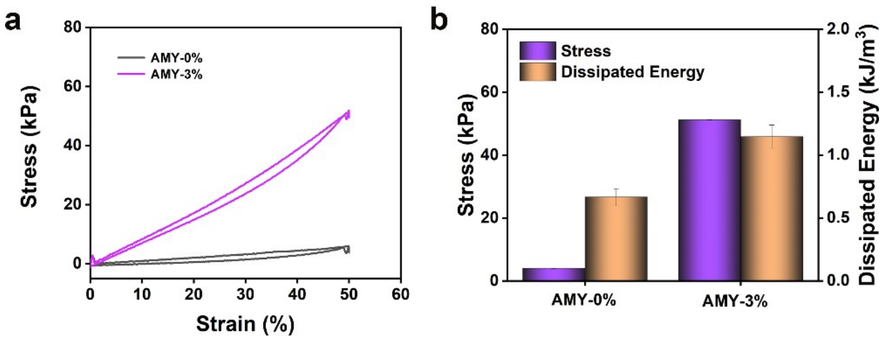

Figure S3. a) Loading–unloading curves of PVA-NaCl-GL-AMY hydrogel; b) the influence of amylose contents on the dissipated energy and maximum stress for hydrogels.

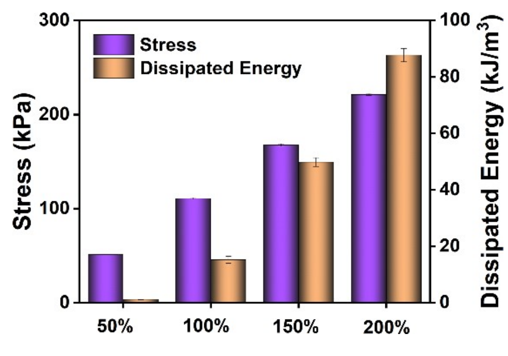

Figure S4. Different tensile strain on the dissipated energy and maximum stress for hydrogels.

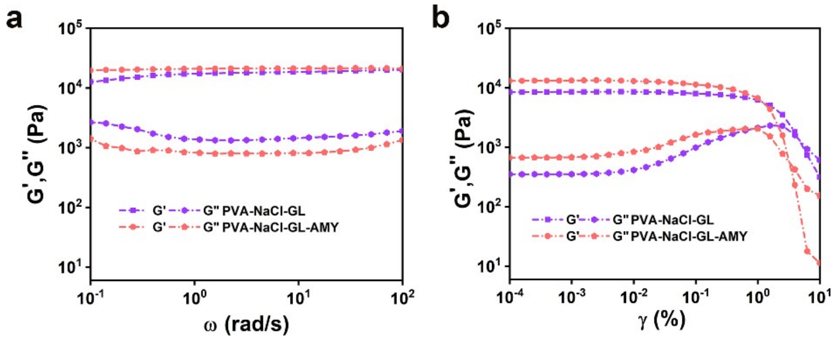

Figure S5. a) The rheological of the PVA-NaCl-GL-AMY hydrogel at diverse strains; b) the rheological of the PVA-NaCl-GL-AMY hydrogel with various frequency.

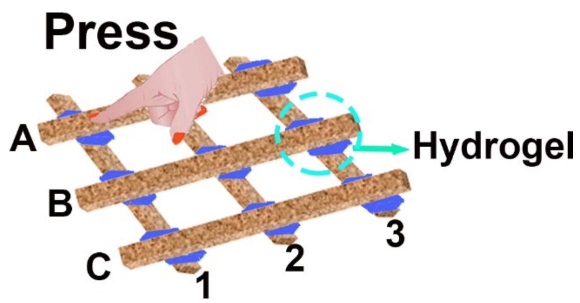

Figure S6. The 3 × 3 array sensor of PVA-NaCl-GL-AMY hydrogel.