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Supporting Information for Highly Transparent, Mechanical, and Self-Adhesive Zwitterionic Conductive Hydrogels with Polyurethane as Cross-Linker for Wireless Strain Sensors †

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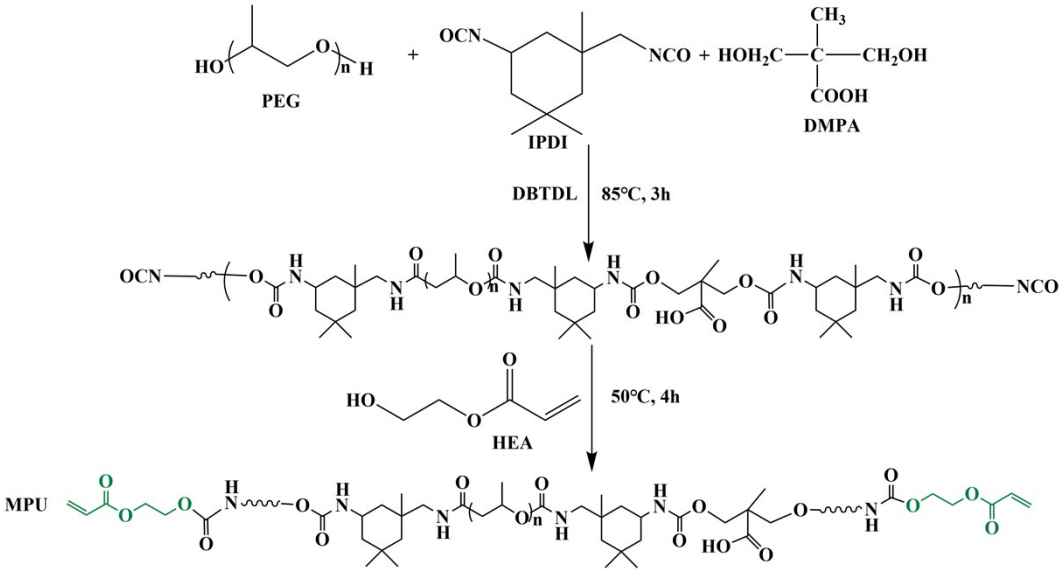
Table S1. The compositions of the hydrogels

Code	AM (g)	SBMA (g)	MPU (g)	APS (mg)	MBA (mg)	TEMED (μL)	$Zn(NO_3)_2$ (g)	Water (g)
PAS	4	0.5	0	40	4	20	0	8
PASU0.5	4	0.5	0.25	40	0	20	0	8
PASU1	4	0.5	0.5	40	0	20	0	8
PASU2	4	0.5	1	40	0	20	0	8
PASU3	4	0.5	1.5	40	0	20	0	8
PASU4	4	0.5	2	40	0	20	0	8
PASU1-Zn0.5	4	0.5	0.5	40	0	20	0.065	8
PASU1-Zn1	4	0.5	0.5	40	0	20	0.13	8
PASU1-Zn2	4	0.5	0.5	40	0	20	0.26	8
PASU1-Zn3	4	0.5	0.5	40	0	20	0.39	8
PASU1-Zn4	4	0.5	0.5	40	0	20	0.52	8



Scheme S1. Synthetic route to MPU.

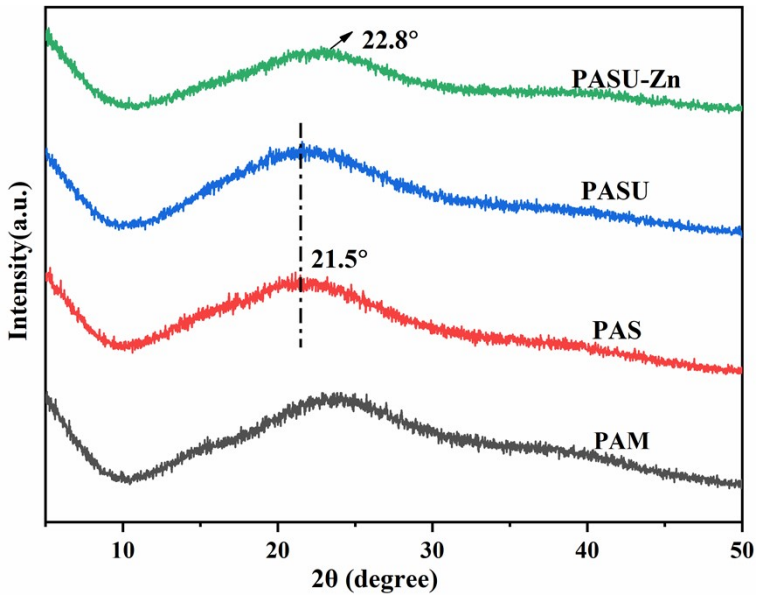


Fig. S1. XRD spectra of PAM, PAS, PASU, and PASU-Zn hydrogels.

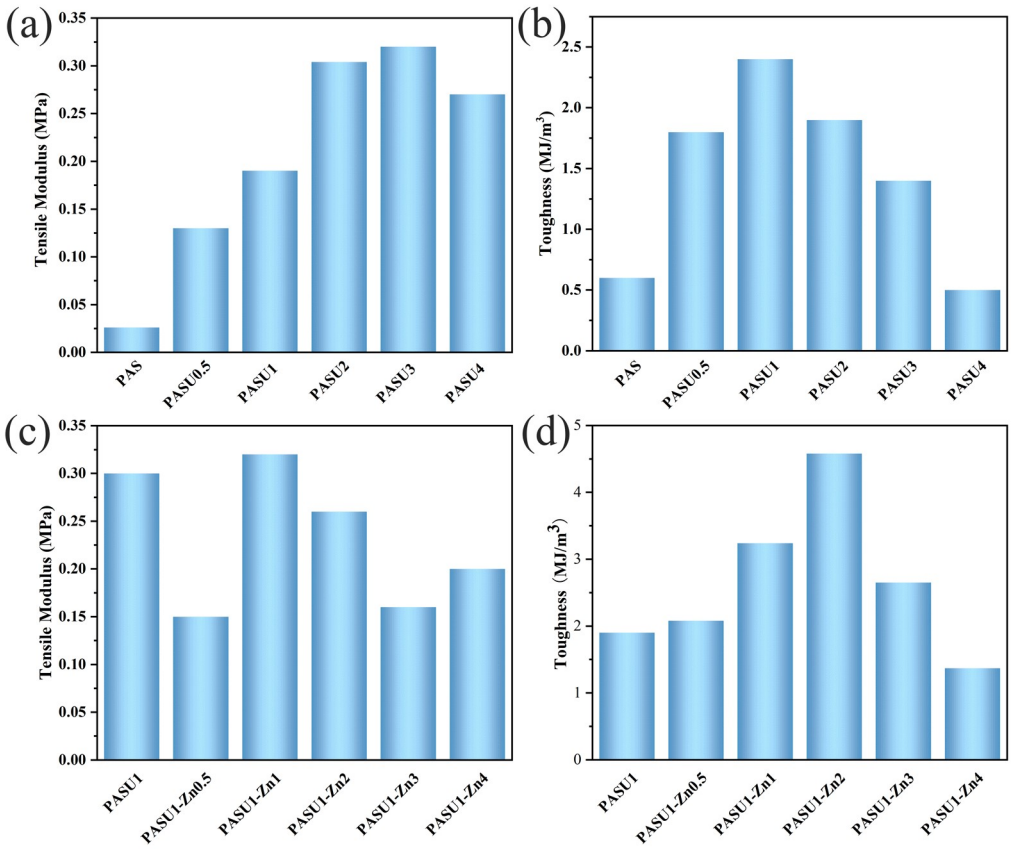


Fig. S2. (a) The tensile modulus and (b) The fatigue resistance of hydrogels cross-linked with different contents of MPU;

(c) The tensile modulus and (d) The fatigue resistance of of hydrogels with different contents of Zn ions;

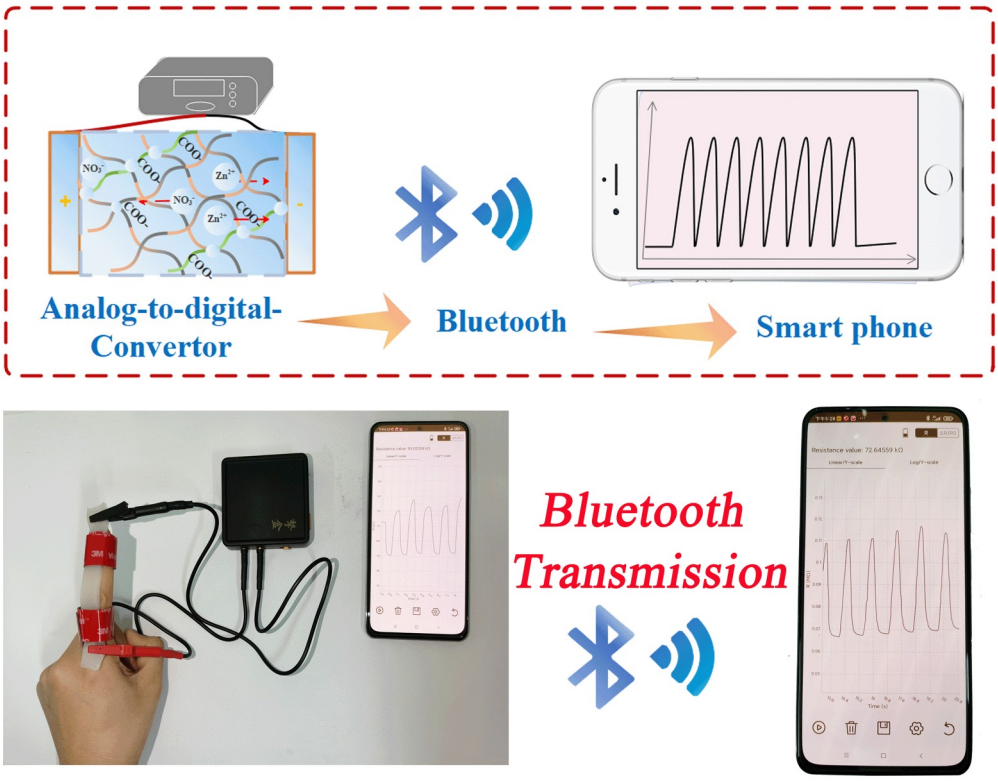


Fig. S3. The PASU-Zn hydrogel as a strain sensor for mechanical conduction signal applications and the wireless system connected to the smartphone: changes in the electrical signals for monitoring.

Table S2. Performance summary of representative hydrogels.

Materials	Sensitivity	Time		Mechanical strength (KPa)	Elongation at break (%)	Adhesion strength on pig skin (kPa)	Reference
		Response (ms)	Recovery (ms)				
PDA–clay–PSBMA hydrogels	1.2	/	/	99	900	22.3	46
F127DA-SBMA-rifampicin hydrogels	/	/	/	112	1420	6	47
P(SBMA-co-AMPS) hydrogels	/	/	/	44.5	874	4	48
poly(AA-co-AM)/AP hydrogels	8.82	100	/	200	1089	12.57	49
PVA-GA/P(AA-co-Am)	2.58	180	/	300	2000	/	50

organohydrogel							
PAM/Fe3+-TA@CNFs hydrogels	/	/	/	108	140	/	51
PSBMA/PVA hydrogels	/	/	/	228	400	5.22	16
PVAA-Fe hydrogels	/	/	/	60	450	/	52
PAA/F127/ILs hydrogels	2.08	/	200	36.3	862	/	53
Alginate-P(SBMA-co-AAm)	1.09	/	/	146.1	1353	/	54
PU ionogels	2.14	110	No	1590	390	/	26
dL4S90 hydrogel.	1.8	/	/	270	2000	/	55
AM/NIPIM/MC hydrogel	4.9	145	150	664	1732	15.2	28
PVA/PANI hybrid hydrogels.	4.28	250	/	42	230	/	56
SiO2@PANI-P(AM/LMA) hydrogel	4.38	300	/	1398	3311	/	57
P(AM-co-SBMA) /MPU/Zn^{2+}	0.14	248	280	1020	1193	59.6	This work