Supplementary Information (SI) for Journal of Materials Chemistry B.

Supporting Information

Graphene-Based Porous Hydrogels with Tunable Piezoresistive Response for Wearable Strain Sensing

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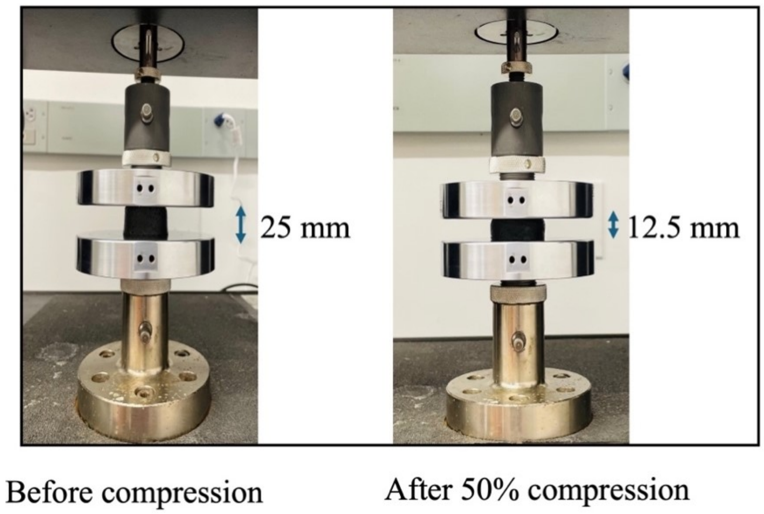

Figure S1. Digital photographs of the hydrogel in the process of compression.

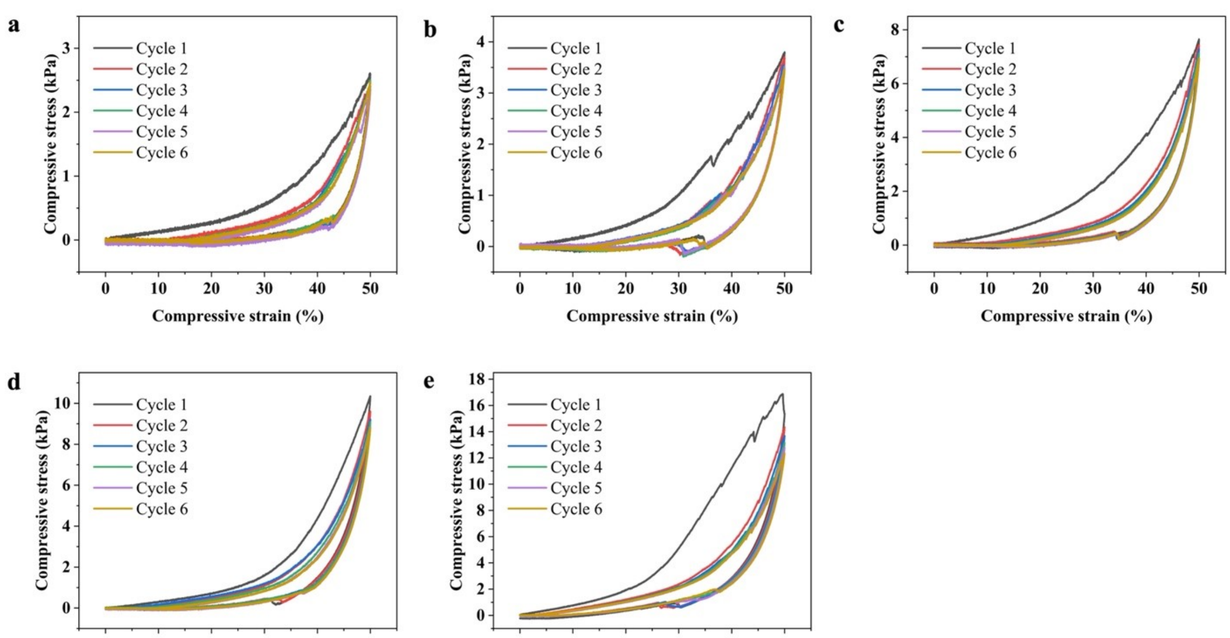

Figure S2. Multi 50% compress-release cycles of hydrogel samples with graphite weight percentages, a) 1.93 b) 2.34 c) 2.77 d) 3.05 and e) 3.32 respectively

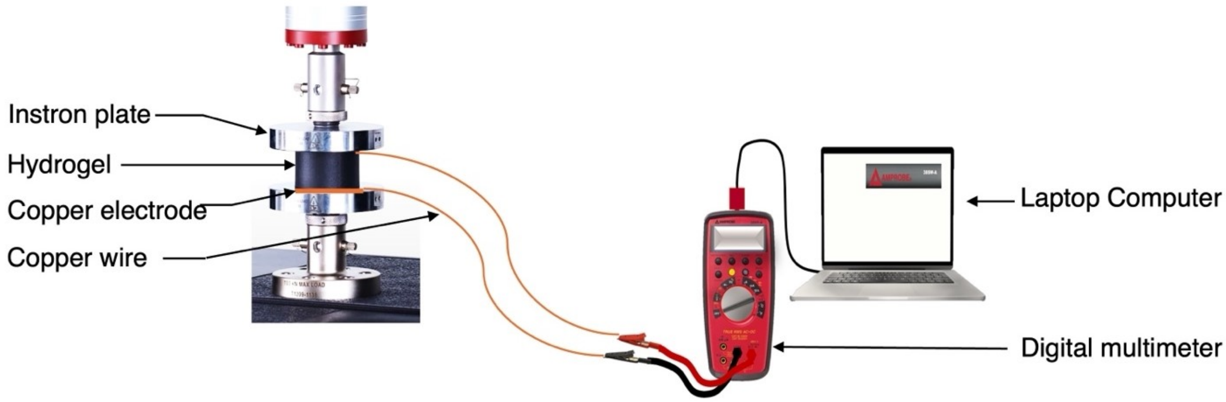

Figure S3. Schematic illustration of the experimental set-up to characterize the piezoresistive properties of the hydrogel.

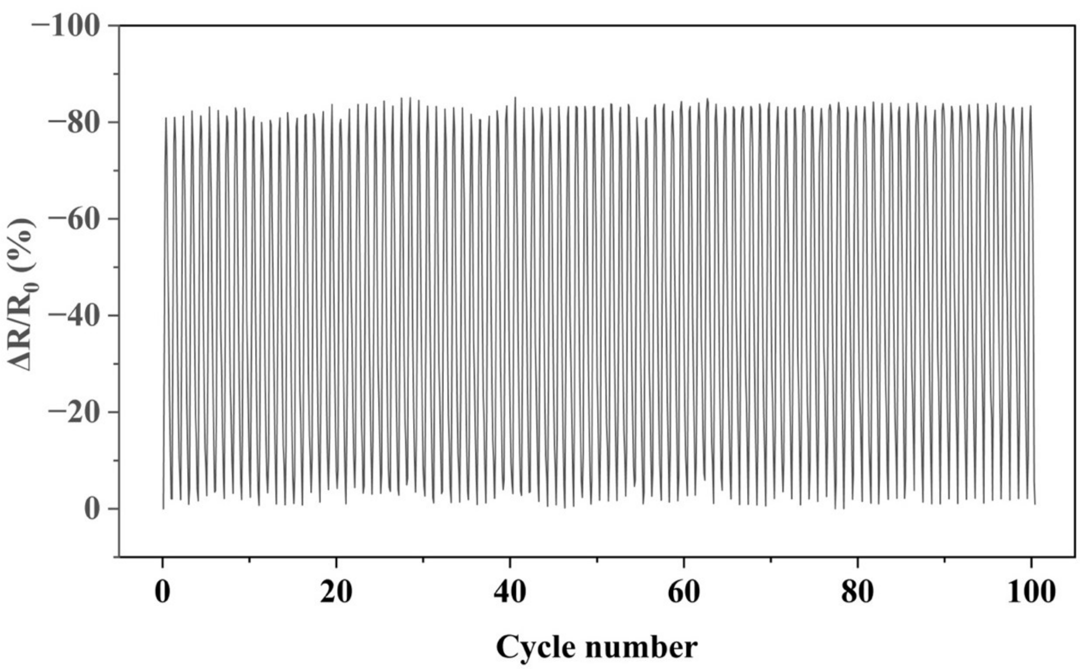

Figure S4. Change of electrical resistance of a hydrogel sensor over 100 loading/unloading cycles.

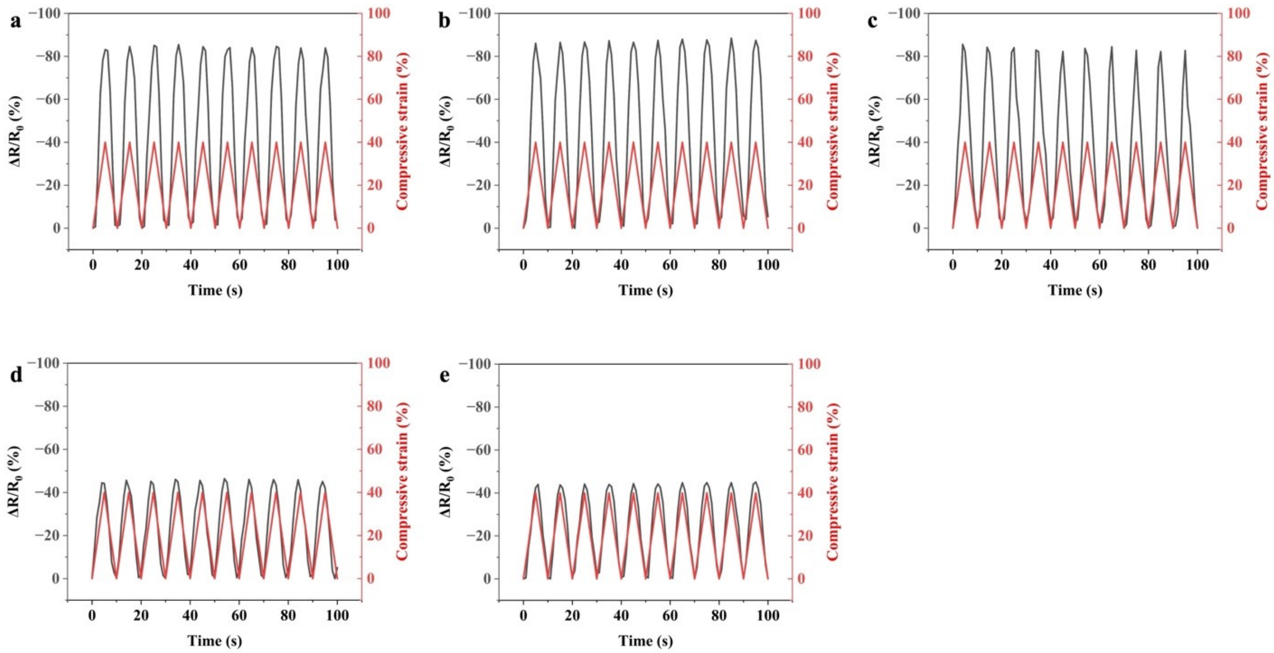

Figure S5. Change of electrical resistance for hydrogel sensors made with monomer: cross linker malar ratios, a) 60:1 b) 30:1 c) 20:1 d) 15:1 and e) 7.5:1 undergoing 40% compressions and relaxations at regular time intervals.

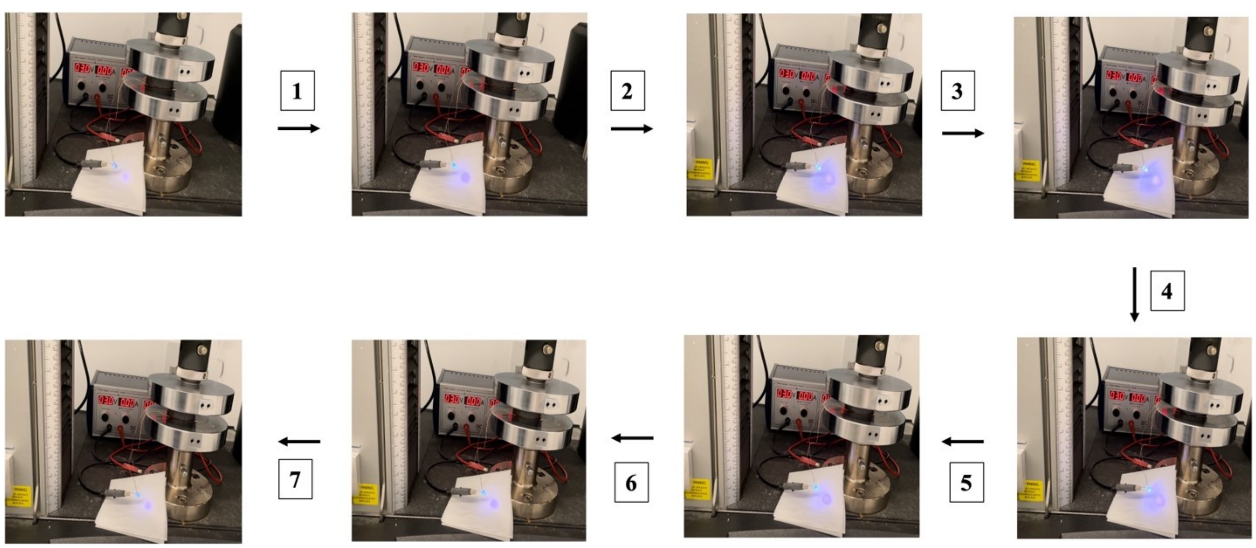

Figure S6. Stages 1-3 represent gradual increase of brightness of blue LED upon compression of the hydrogel, stages 4-7 represent gradual decrease of brightness of blue LED upon relaxation.

Table S1. Comparison of performances of PHMA/Graphene hydrogel with literature-reported hydrogel sensors

Sample	Gauge factor	strain at which gauge factor was calculated	Mode of deformation
PVA/PVP/CNCs hybrid hydrogel[1]	0.48	0–200%	Tension
CPVA/GO-PDA hydrogel[2]	0.33 0.90 5.52	0–75% 75–150% 150–350%	Tension
Poly(AM-co-AA)/CS hydrogel[3]	6.00	700%	Tension
PVA ionic organohydrogel[4]	1.56	0–355%	Tension
PVA/HPS-PA hydrogel[5]	2.90 7.40	0–300% 300–450%	Tension
SA/PAM/DAL/rGO Hydrogel[6]	1.67 7.97	100% 500%	Tension
PVA/PSBMA ionic hydrogel[7]	0.80 1.50	0-50% 50-300%	Tension
Graphene monolith[8]	1.2	50%	Compression
N-CNTs/Ag sponge[9]	1.4	20%	Compression
Graphene monolith[10]	0.58	30%	Compression
Graphene/CNT aerogel[11]	1.25	60%	Compression
PPY hydrogel[12]	0.05	50%	Compression
PHMA/Graphene hydrogel in this work	**13**	**5%**	**Compression**

Reference

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