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Supplementary Materials

Lysine-Triggered Polymeric Hydrogels with Self-Adhesion, Stretchability, and Supportive Properties

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Table S1. Design of formulation.[a]

	AAM[b]	PAAM[b]	DF-PEG[b]	LysMA[b]	Note
/	15.00	0.50	2.00	-	Figure S1 (a)
/	20.00	0.50	2.00	-	Figure S1 (b)
/	22.50	0.50	2.00	-	Figure S1 (c)
/	25.00	0.50	2.00	-	Figure S1 (d)
/	27.50	0.50	2.00	-	Figure S1 (e)[c]
/	30.00	0.50	2.00	-	Figure S1 (f)
/	27.50	0.00	2.00	-	Figure S2 (a)
/	27.50	0.25	2.00	-	Figure S2 (b)
/	27.50	0.50	2.00	-	Figure S2 (c) [c]
/	27.50	0.75	2.00	-	Figure S2 (d)
/	27.50	0.50	0.00	-	Figure S3 (a)
/	27.50	0.50	2.00	-	Figure S3 (b) [c]
/	27.50	0.50	4.00	-	Figure S3 (c)
/	27.50	0.50	6.00	-	Figure S3 (d)
pADL0	27.50	0.50	2.00	0.00	Figure 1 (a) [c]
pADL0.5	27.50	0.50	2.00	0.50	Figure 1 (b)
pADL1	27.50	0.50	2.00	1.00	Figure 1 (c)
pADL1.5	27.50	0.50	2.00	1.50	Figure 1 (d)
pADL2	27.50	0.50	2.00	2.00	Figure 1 (e)
pADL2.5	27.50	0.50	2.00	2.50	Figure 1 (f)
pADL3	27.50	0.50	2.00	3.00	Figure 1 (g)

[a] Potassium persulfate (0.15 % w/v), 1.0 mL deionized water, acrylamide is AAM, polyacrylamide is PAAM, dialdehyde-functionalized poly(ethylene glycol) is DF-PEG, and methacrylated lysine is LysMA. [b]unit: % w/v; [c]The same hydrogel.

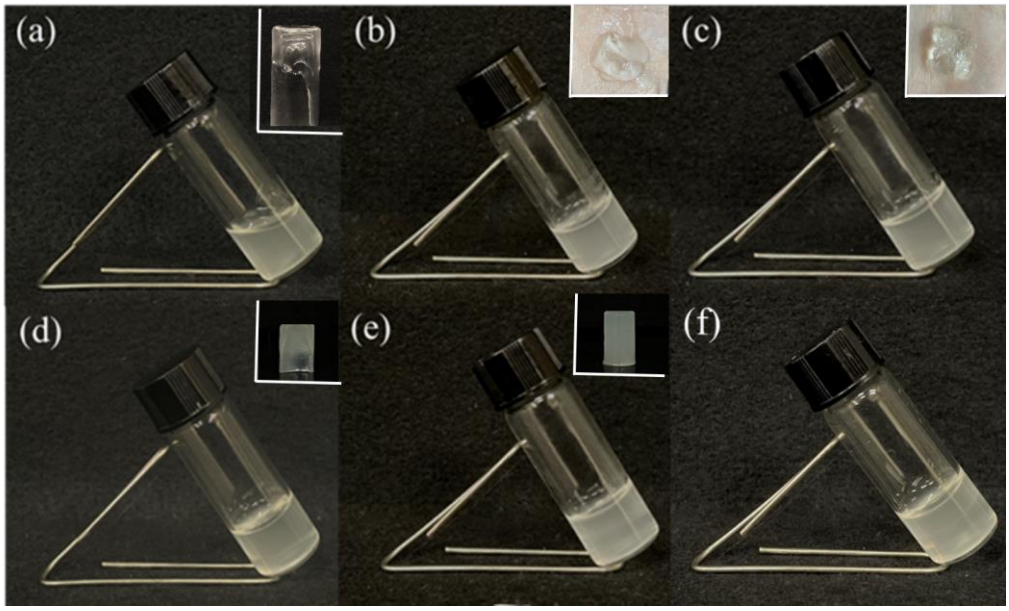


Figure S1. Optical images of hydrogels containing different % w/v of AAM. (a) 15.00 % w/v, (b) 20.00 % w/v, (c) 22.50 % w/v, (d) 25.00 % w/v, (e) 27.50 % w/v, and (f) 30.00 % w/v.

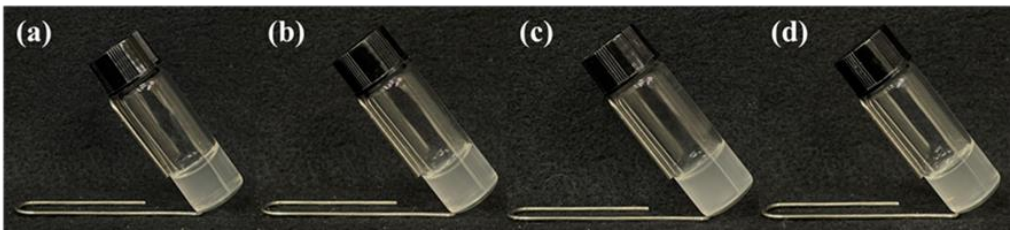


Figure S2. Optical images of hydrogels containing different % w/v of PAAM. (a) 0.00 % w/v, (b) 0.25 % w/v, (c) 0.50 % w/v, and (d) 0.75 % w/v.

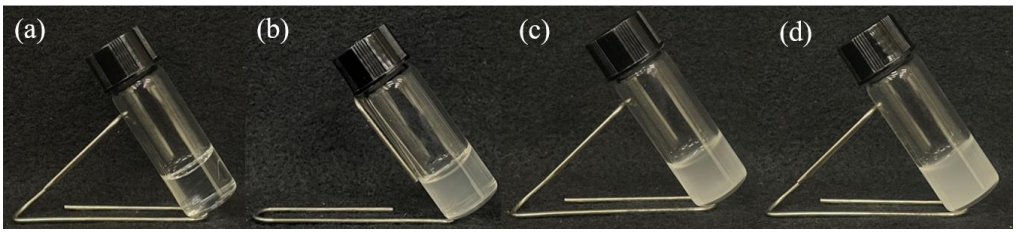


Figure S3. Optical images of hydrogels containing different % w/v of DF-PEG. (a) 0.00 % w/v, (b) 2.00 % w/v, (c) 4.00 % w/v, and (d) 6.00 % w/v.

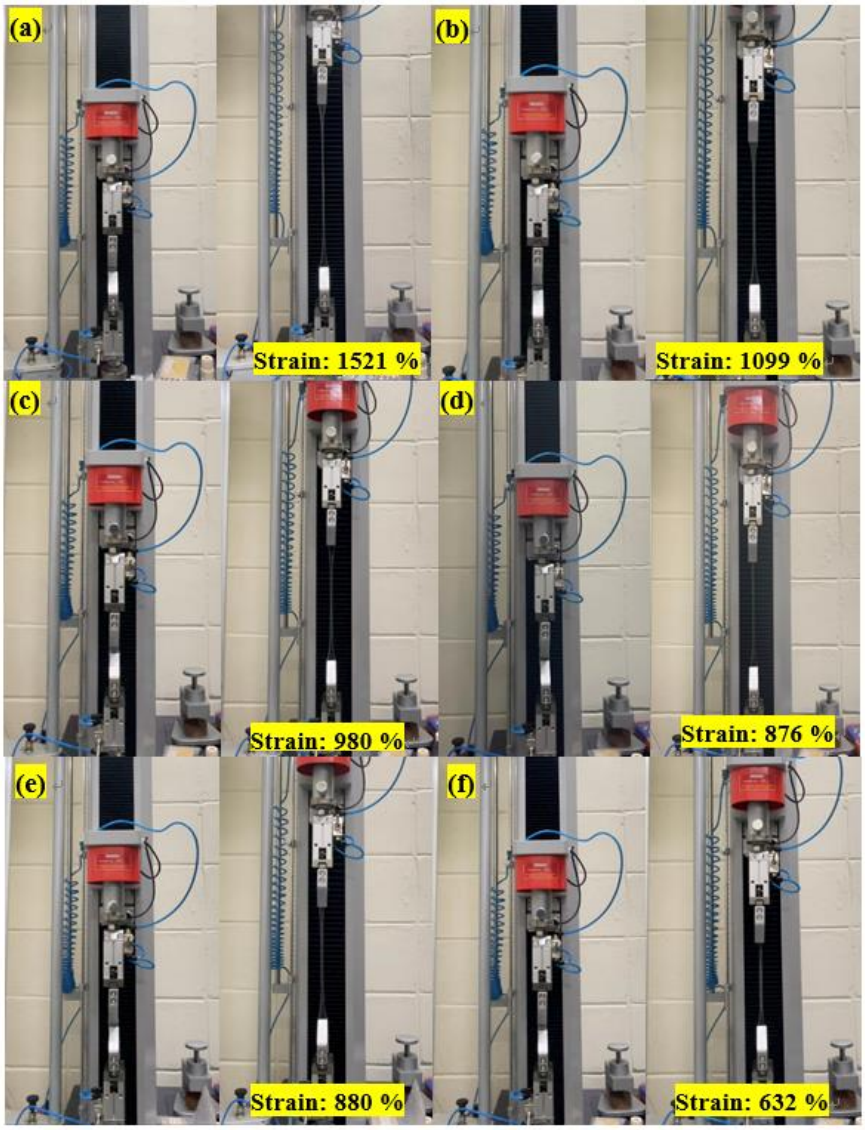


Figure S4. Comparison of tensile tests before and after stretching: (a) pADL0.5, (b) pADL1, (c) pADL1.5, (d) pADL2, (e) pADL2.5, and (f) pADL3. (Left: original length of 1 cm. Right: length after stretching).

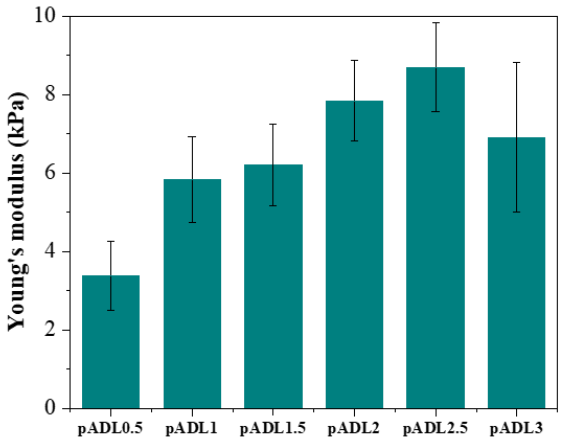


Figure S5. Young's modulus of pADL hydrogels.

Table S2. Mechanical properties of pADLx hydrogels.

	Tensile strength (kPa)	Elongation at break (%)	Toughness (kJ/m³)	Young's modulus (kPa)
pADL0	2.5	51	4.5	-
pADL0.5	5.9	1521	57.6	3.4
pADL1	11.3	1099	69.5	5.8
pADL1.5	10.8	980	61.1	6.2
pADL2	13.8	876	78.5	7.8
pADL2.5	18.9	880	98.8	8.7
pADL3	10.5	632	45.0	6.9

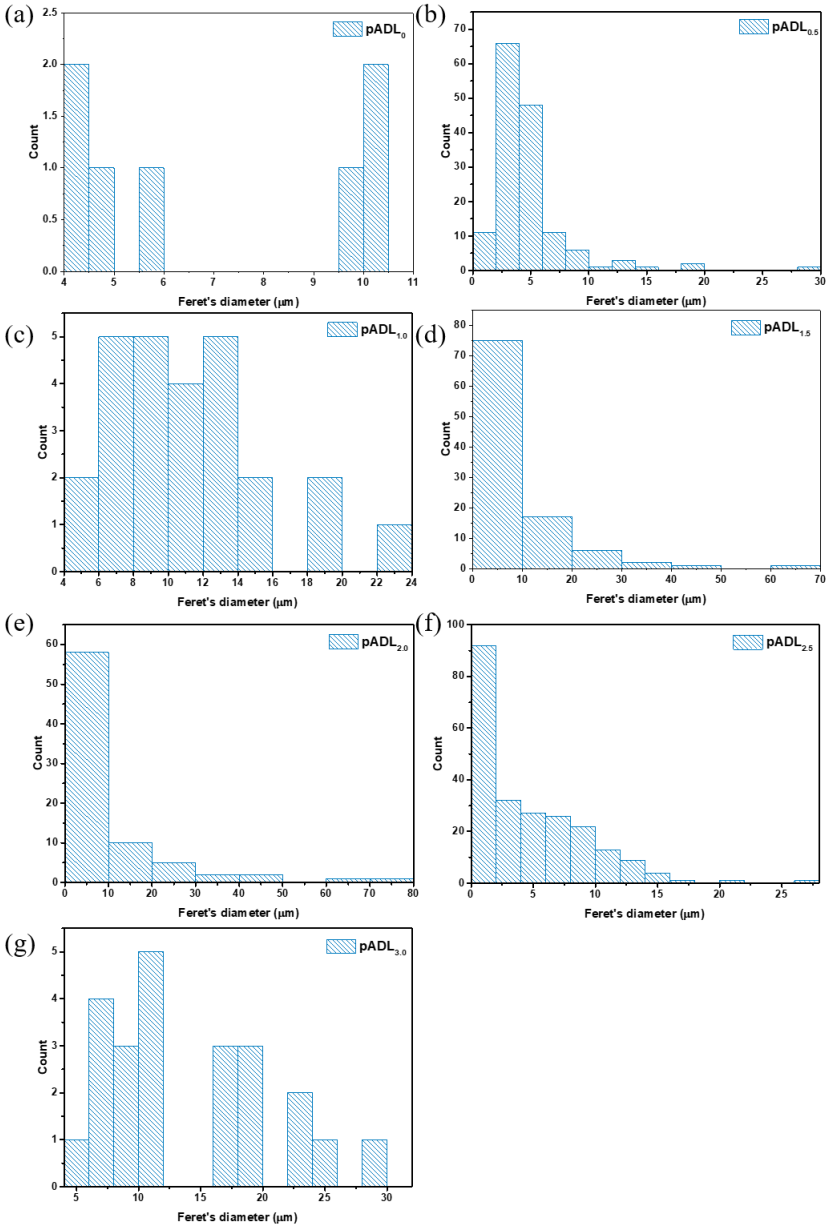


Figure S6. The porous diameter distributions of hydrogels of (a) pADL0, (b) pADL0.5, (c) pADL1, (d) pADL1.5, (e) pADL2, (f) pADL2.5, and (g) pADL3.

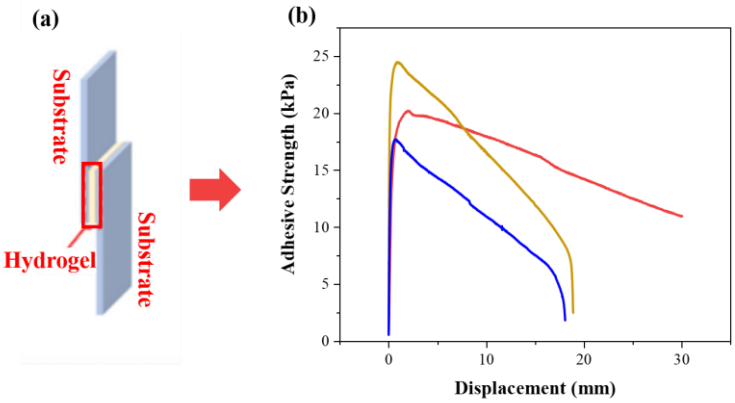


Figure S7. Lap-shear strength test of the pADL2.5 hydrogel on various substrates (red for glass, blue for skin, and brown for aluminum).

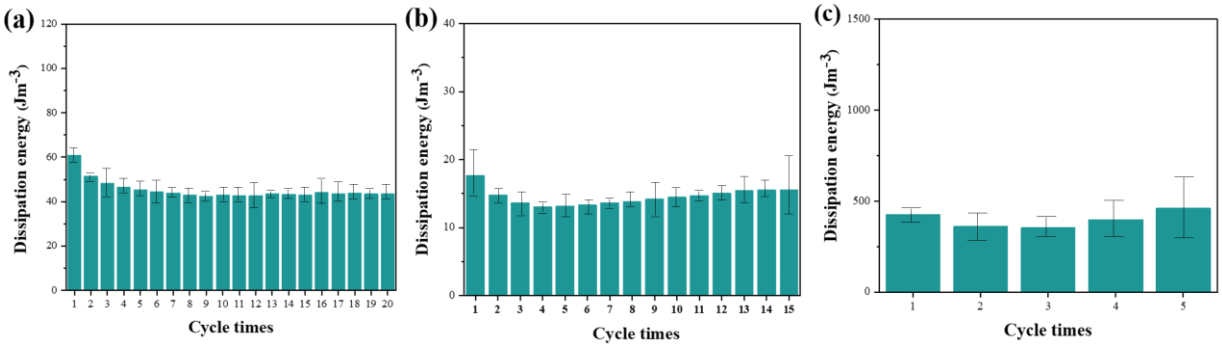


Figure S8. The dissipated energy of the pADL2.5 hydrogel: (a) 200% for 20 cycles, (b) 500% for 15 cycles, and (c) 800% for 5 cycles.

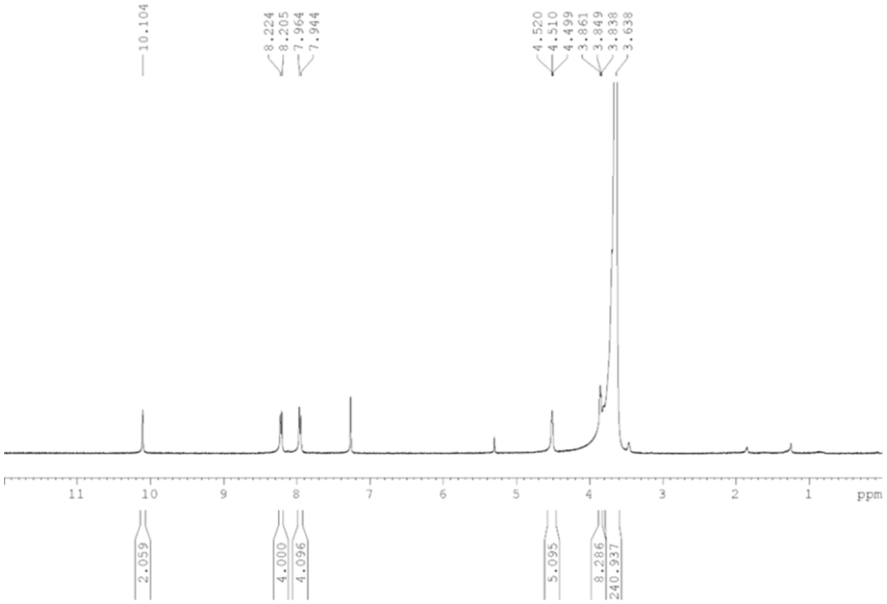


Figure S9. ^{1}H NMR spectrum of DF-PEG in $CDCl_3$.

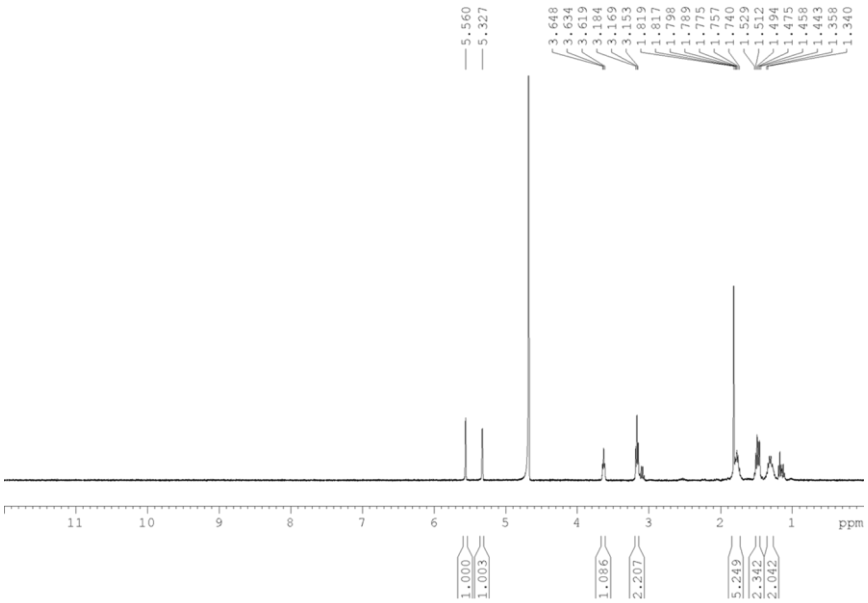


Figure S10. ^{1}H NMR spectrum of LysMA in D_2O.