

Electronic Supplementary Information (ESI) for

Ultra-stretchable, self-recovery, notch-insensitive, self-healable and adhesive hydrogel enabled by synergetic hydrogen and dipole-dipole crosslinking

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Table S1 Composition of the AMA hydrogels.

Samples	AM (g)	MA (g)	AN (g)
A-M_{3.5}-A₀	30	3.5	0
A-M_{3.5}-A_{1.4}	30	3.5	1.4
A-M_{3.5}-A_{2.8}	30	3.5	2.8
A-M_{3.5}-A_{5.6}	30	3.5	5.6
A-M_{3.5}-A_{11.2}	30	3.5	11.2
A-M_{3.5}-A_{16.8}	30	3.5	16.8
A-M₀-A_{1.4}	30	0	1.4
A-M₂-A_{1.4}	30	2	1.4
A-M_{3.5}-A_{1.4}	30	3.5	1.4
A-M₅-A_{1.4}	30	5	1.4
A-M_{6.5}-A_{1.4}	30	6.5	1.4
A-M₈-A_{1.4}	30	8	1.4

Supplementary Figure

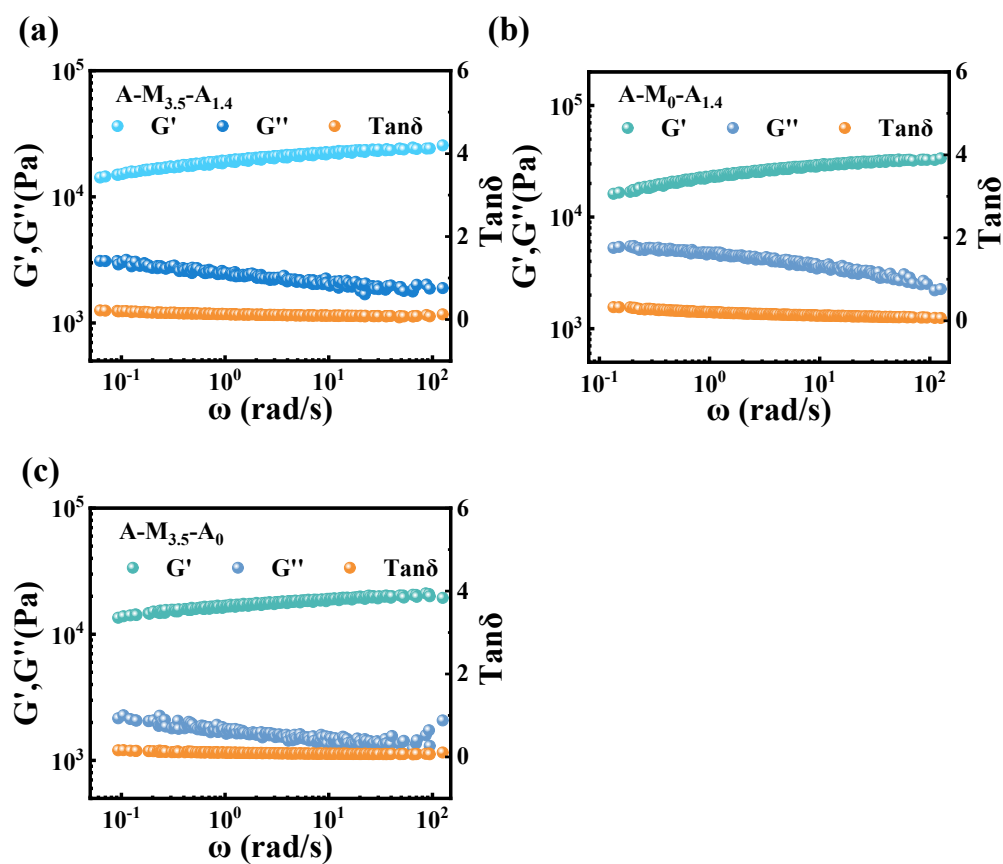


Fig. S1 Master curves of frequency dependence of G , G'' and $\tan\delta$ of the $A-M_{3.5}-A_{1.4}$, $A-M_0-A_{1.4}$ and $A-M_{3.5}-A_0$ hydrogels.

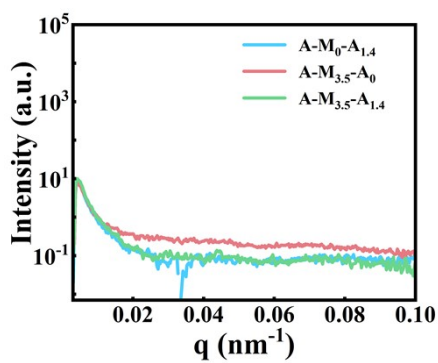


Fig. S2 SAXS intensity distribution pattern of the $A-M_{3.5}-A_{1.4}$, $A-M_0-A_{1.4}$ and $A-M_{3.5}-A_0$ hydrogels

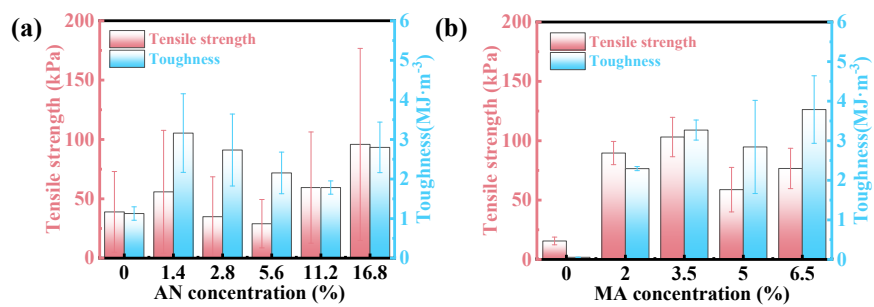


Fig. S3 Tensile strength and toughness of the A-M_{3.5}-A₀ and A-M₀-A_{1.4} hydrogels.

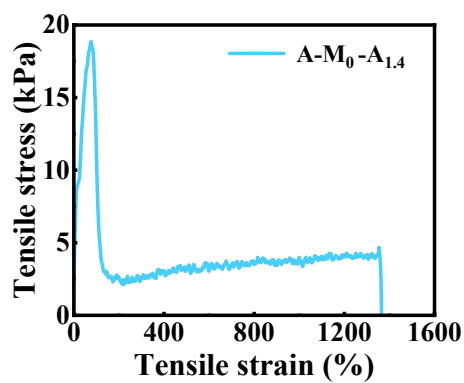


Fig. S4 Tensile stress-strain curve of the A-M₀-A_{1.4} hydrogel.

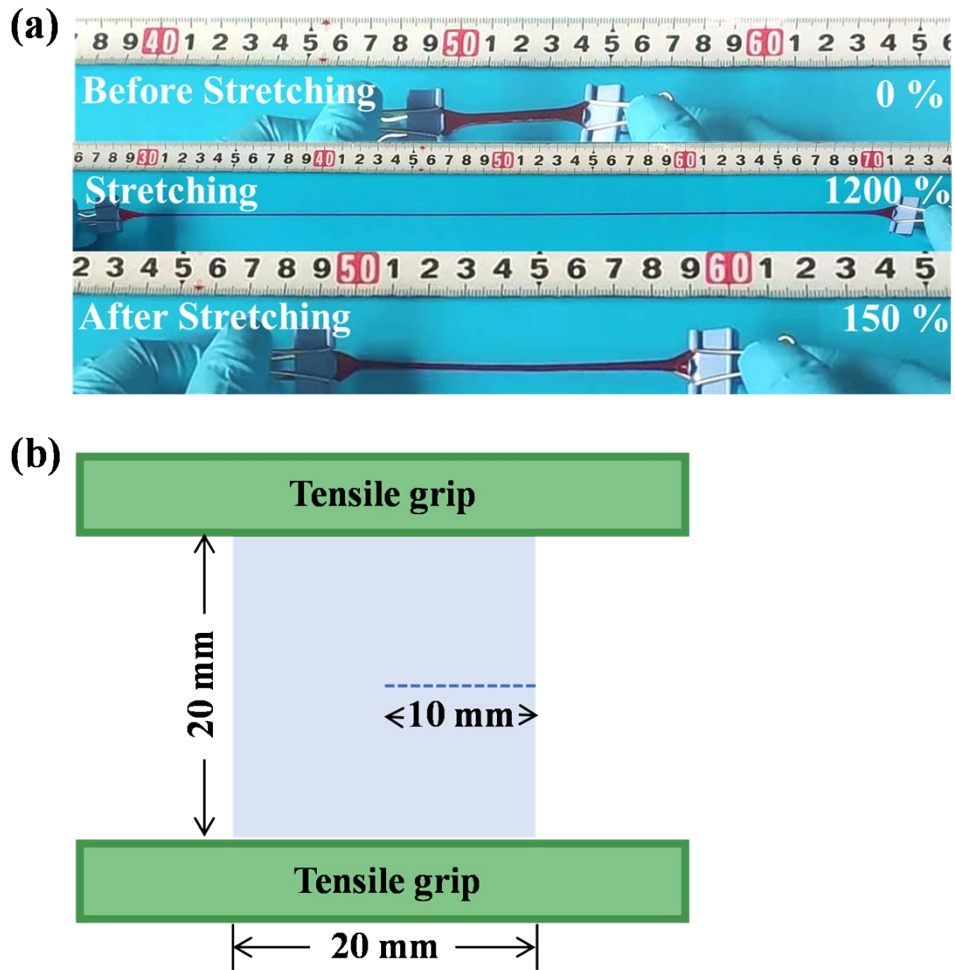


Fig. S5 (a) Self-recovery performance of the A-M_{3.5}-A_{1.4} hydrogel stained with red ink after stretching to 1200% strain. (b) The geometry of the notched sample.