Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Polyetheramine（PEA）: a versatile platform to tailor the properties of hydrogel via H-bonding interaction

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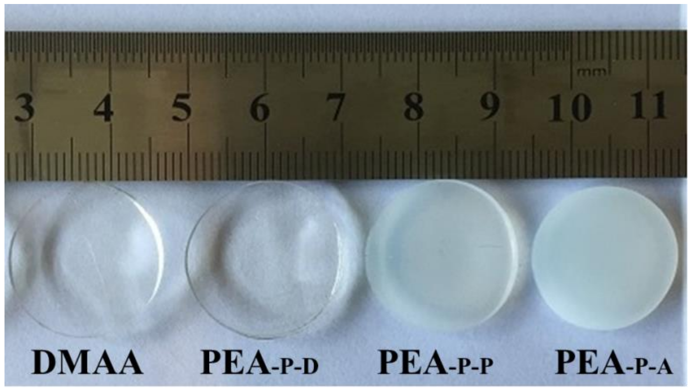

Fig. S1 Photographs of different types of hydrogels with same PEA content（10%）.

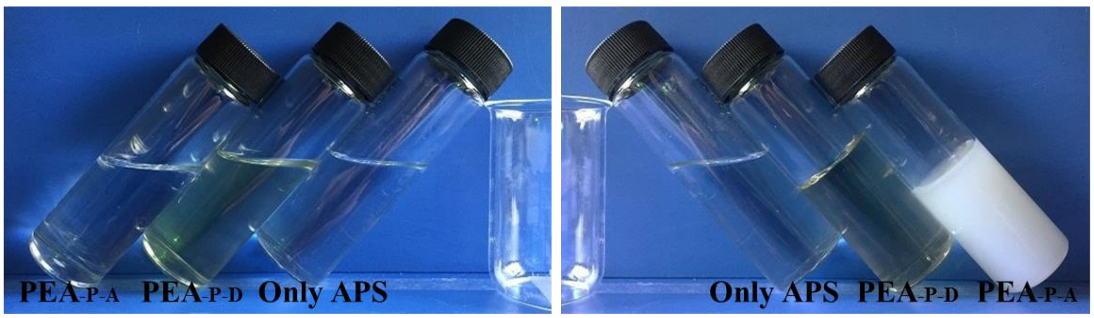

Fig. S2 Polymerization state of PEA$_{-P-A}$-10%-PAAm hydrogel，PEA$_{-P-D}$-10%-PAAm hydrogel and only APS hydrogel after 2 hours at room temperature.

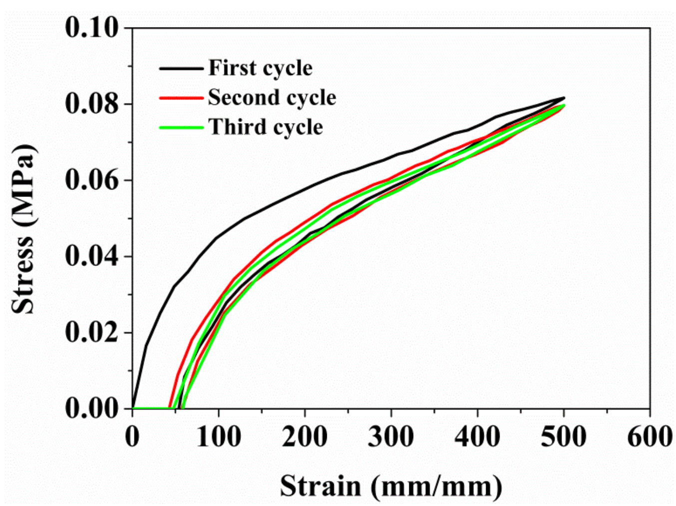

Fig. S3 Three consecutive loading-unloading cycles curves without any lapse time between the cycles of PEA$_{-P-A}$-10%-PAAm hydrogel.

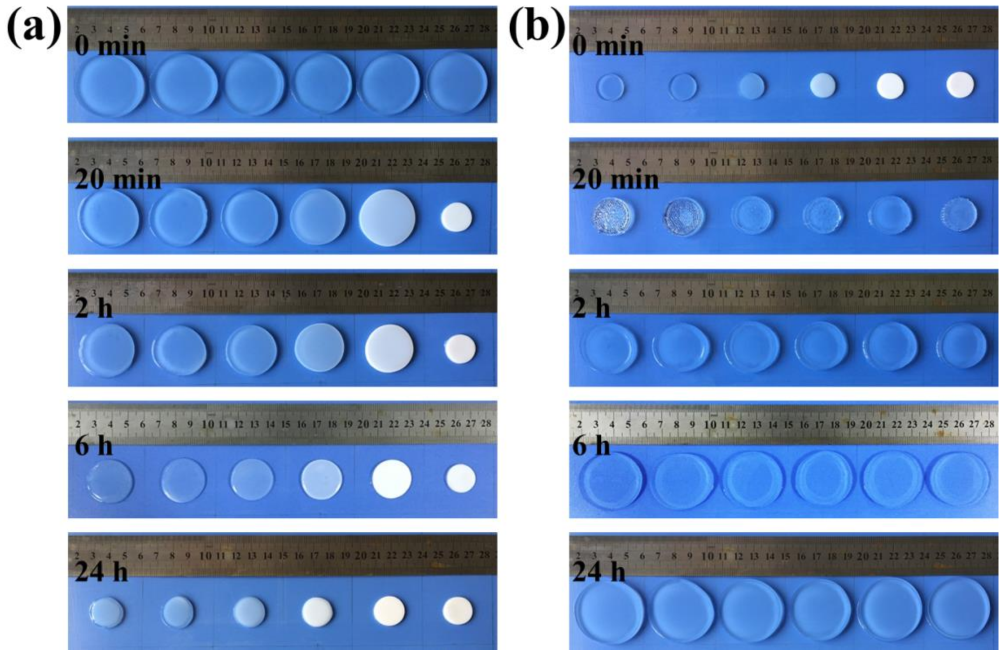

Fig. S4 The size and color change of PEA$_{\text{-P-A}}$-PAAm hydrogels with different content of PEA$_{\text{-P-A}}$ at different times in (a) hydrochloric acid and (b) sodium hydroxide aqueous solution(From left to right, the PEA$_{\text{-P-A}}$ content is 0%,1%, 3%,5%, 10%,20%，respectively.).

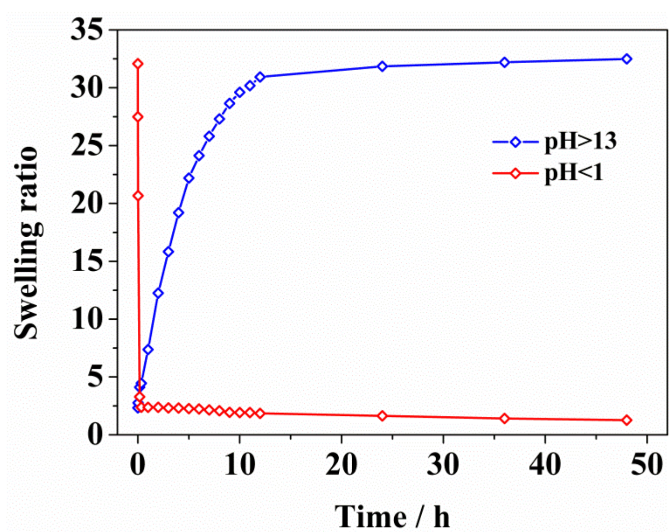

Fig. S5 The swelling-curves of PEA$_{\text{-P-A}}$-20%-PAAm hydrogel in pH<1 and pH>13 solutions.

Table S1. Compositions of PEA_{-P-A}-PAAm hydrogels with different PEA_{-P-A} content.

Sample	AAm/g	PEA/g	APS/g	BIS/g	Water /g
PEA_{-P-A}-1%-PAAm	10	0.1	0.01	0.005	23.6
PEA_{-P-A}-3%-PAAm	10	0.3	0.01	0.005	24.0
PEA_{-P-A}-5%-PAAm	10	0.5	0.01	0.005	24.5
PEA_{-P-A}-10%-PAAm	10	1.0	0.01	0.005	25.7
PEA_{-P-A}-20%-PAAm	10	2.0	0.01	0.005	28

Table S2. The formulas of the model compounds.

Sample	AAm/g	PEA/g	APS/g	Water/g
PEA_{-P-P}-PAAm	0.5	0.5	0.005	10
PEA_{-P-A}-PAAm	0.5	0.5	0.005	10
PEA_{-P-D}-PAAm	0.5	0.5	0.005	10