Supporting Information

Controllable Fabrication of the Novel pH-, Thermo-, and Light-Responsive Supramolecular Dendronized Copolymers with Dual Self-Assembly Behavior

ChangAn Yang,[*1] *Ling Chen,*[1] *He Huang,*[1] *Tuo Ji,*[1] *YingXiang Jiang,*[1] *Xiaobo Chen,* [*2]

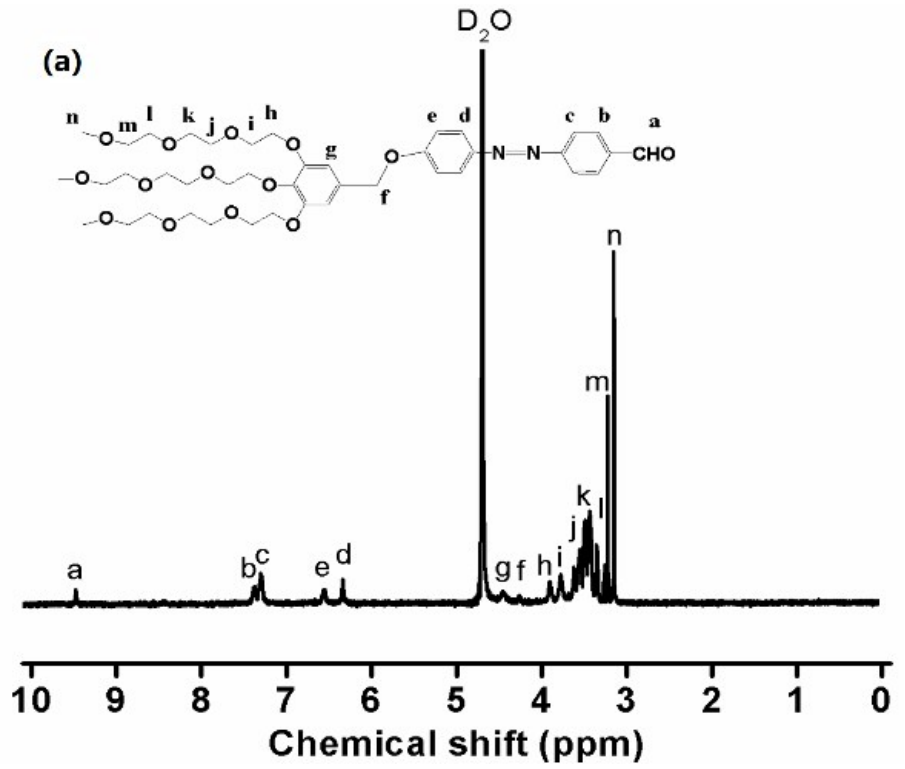
CongShan Zhou,[*1]

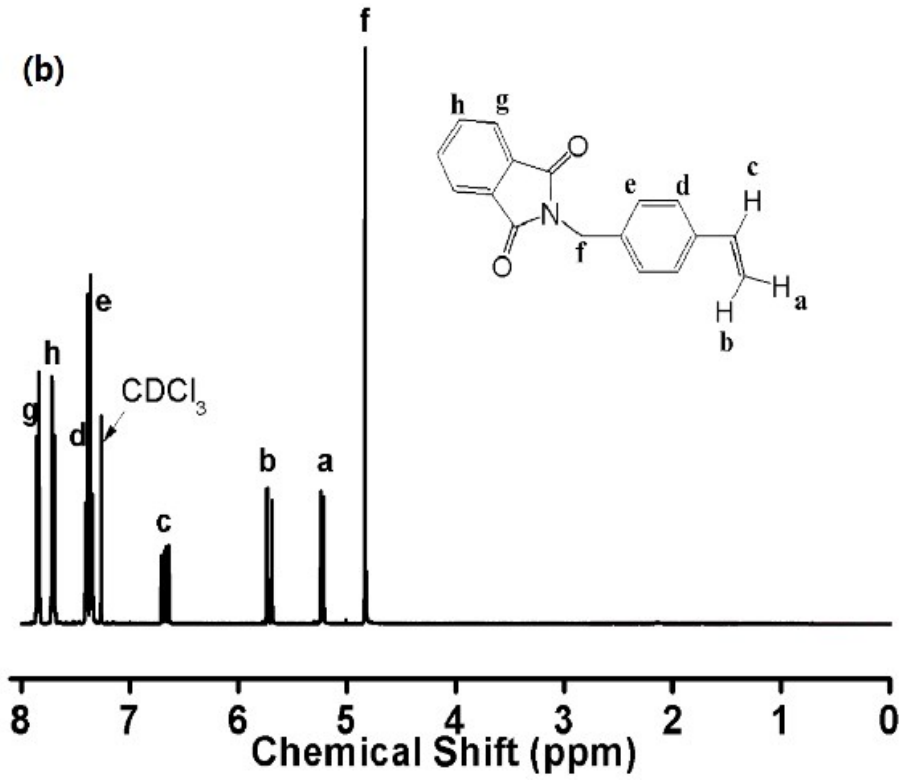
[1]Department of Chemistry and Chemical Engineering, Hunan Institute of Science and Technology, Yueyang 414006, Hunan Province, PR China.

[2]Department of Chemistry, University of Missouri – Kansas City, Kansas City, MO 64110, USA.

Corresponding Authors: Chang_anyang@163.com (ChangAn Yang), chenxiaobo@umkc.edu, zhoucongsh@126.com

Figure S1-S10 and Table S1.





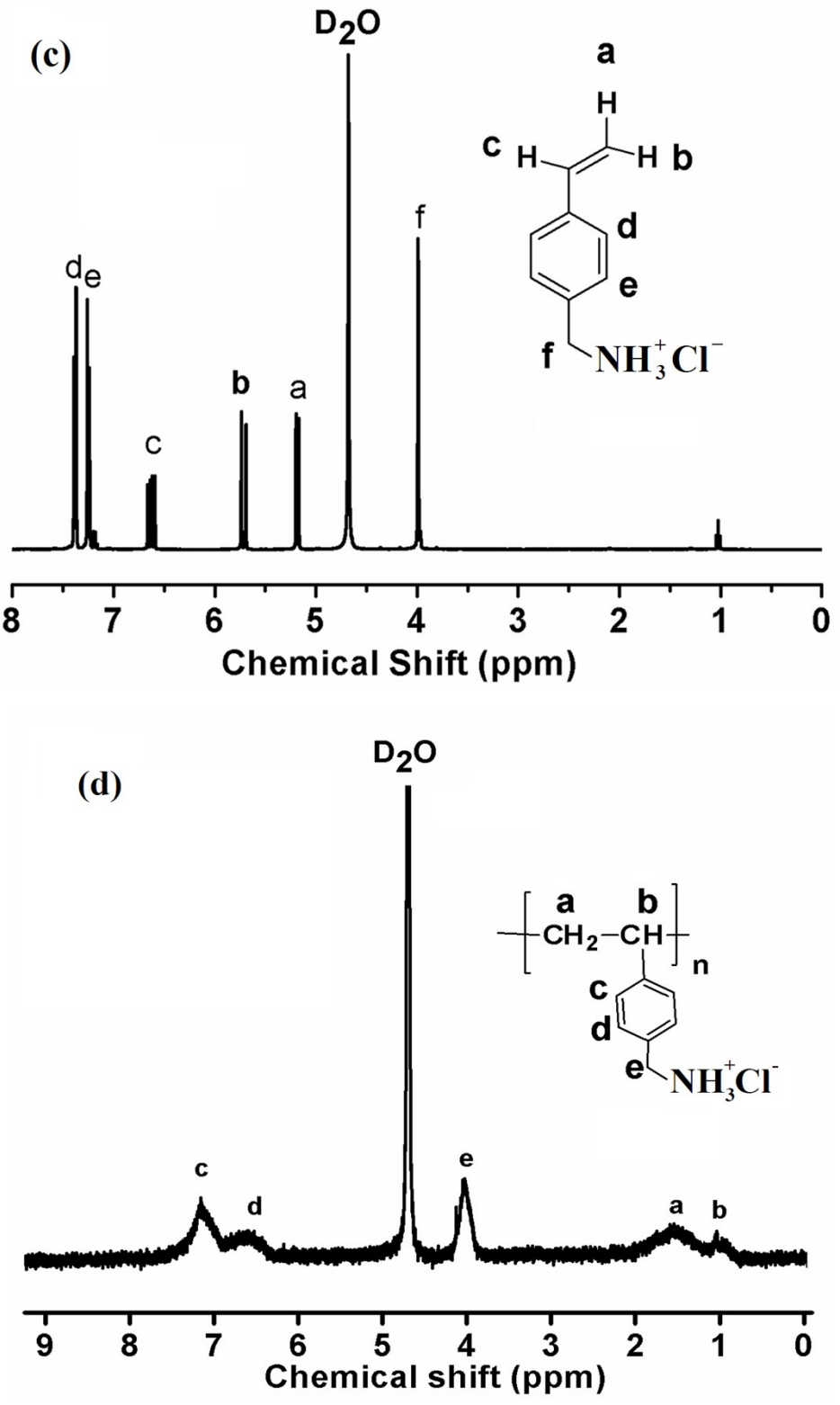


Figure S1. ^{1}H NMR spectra of G1-Azo-CHO (a),N-(4-Vinylpheny) phthalimide(b), 4-VBAHS (c) and the polymer PVBAHS (d) and in D_2O.

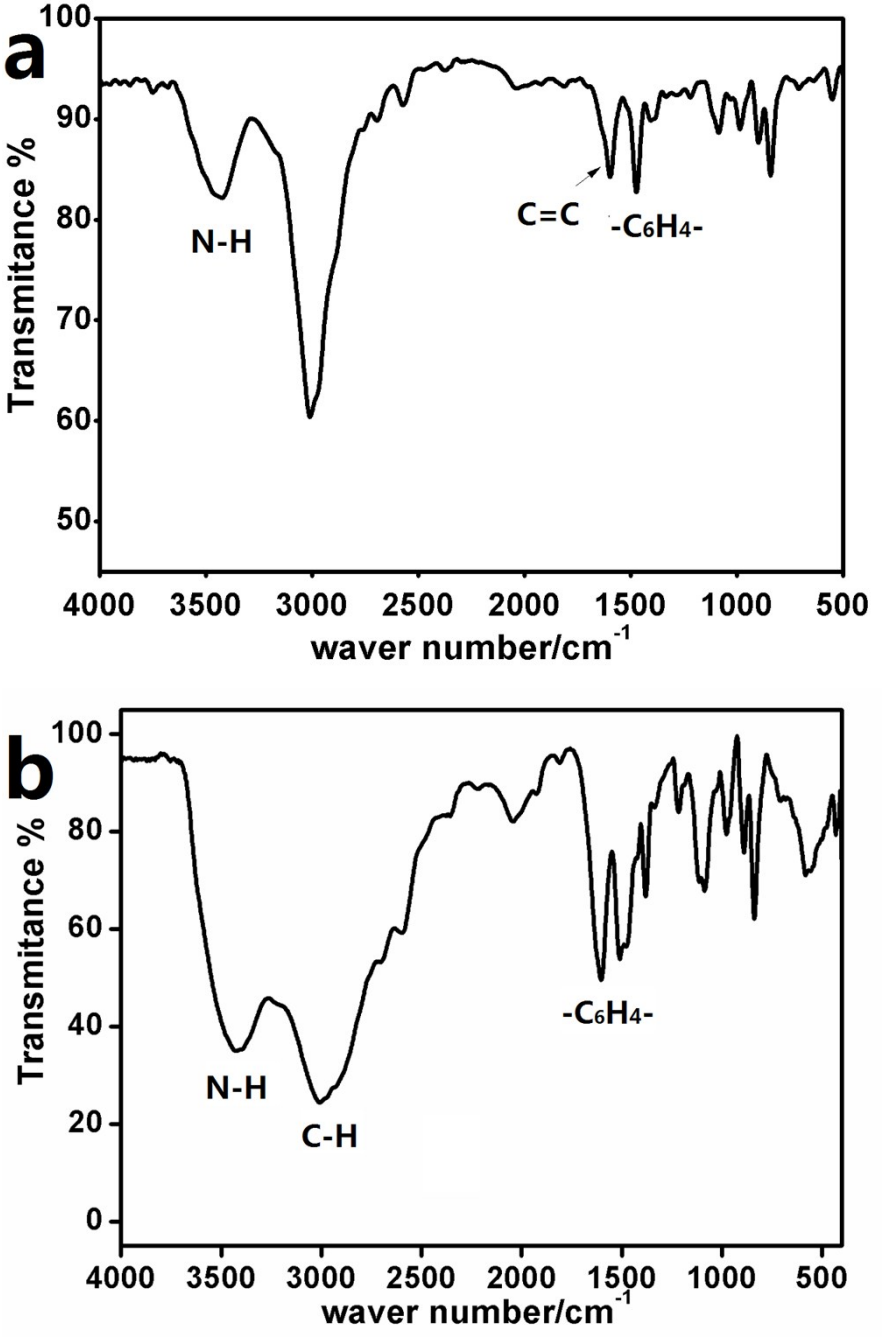


Figure S2. FT-IR image of 4-VBAHS (a) and PVBAHS (b).

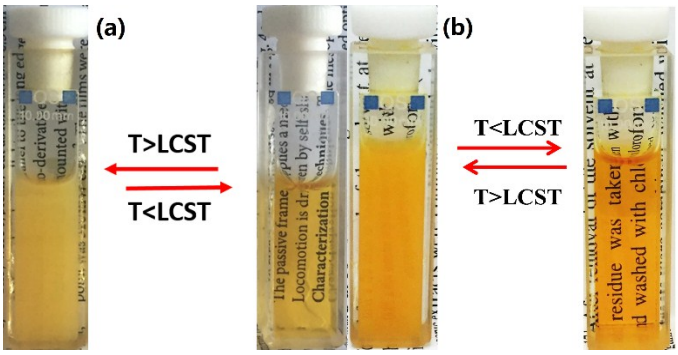


Figure S3. The optical images of turbidity transitions solution of monomer G1-Azo-CHO (a) and copolymer (b).

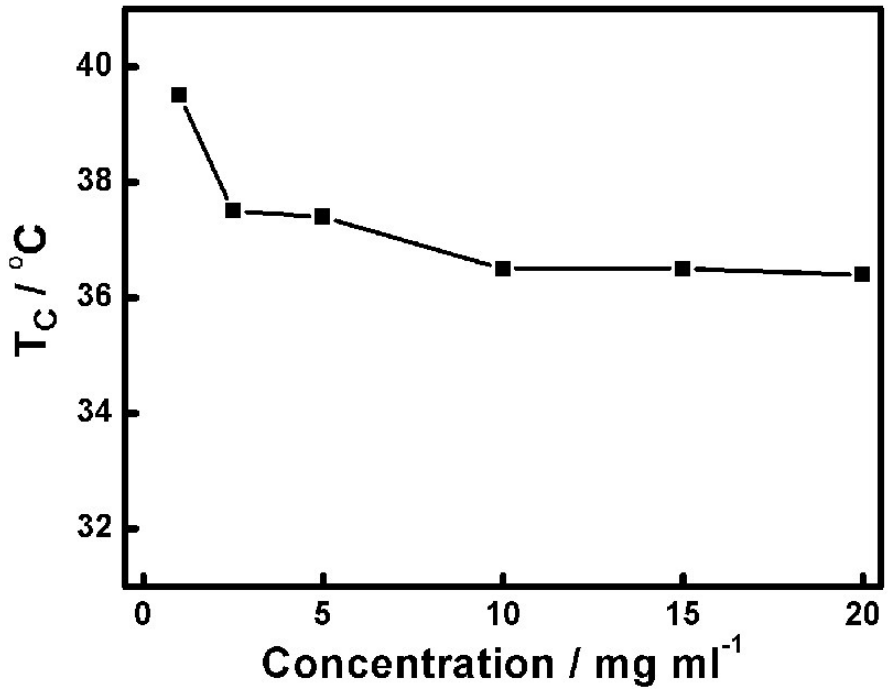
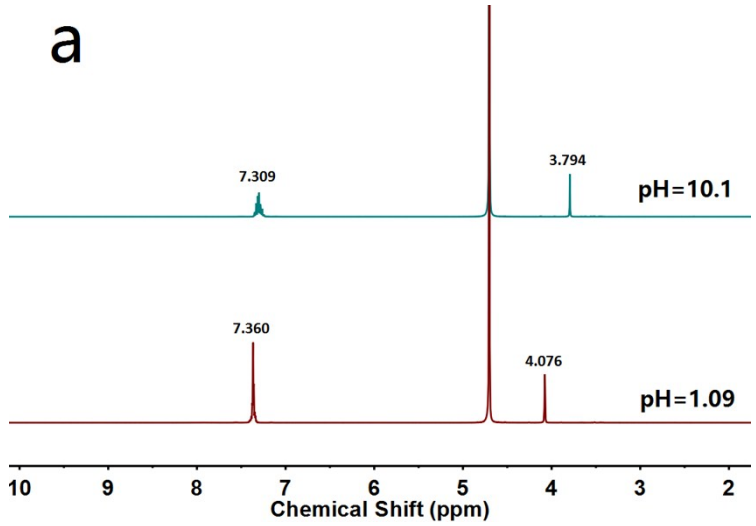
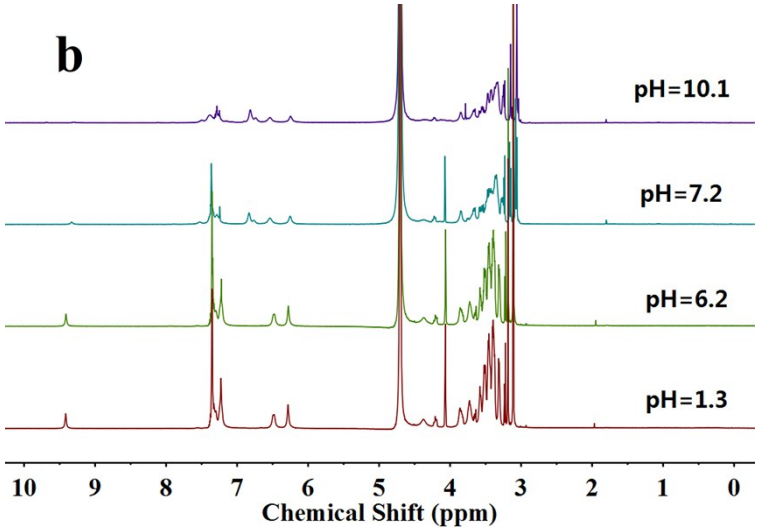
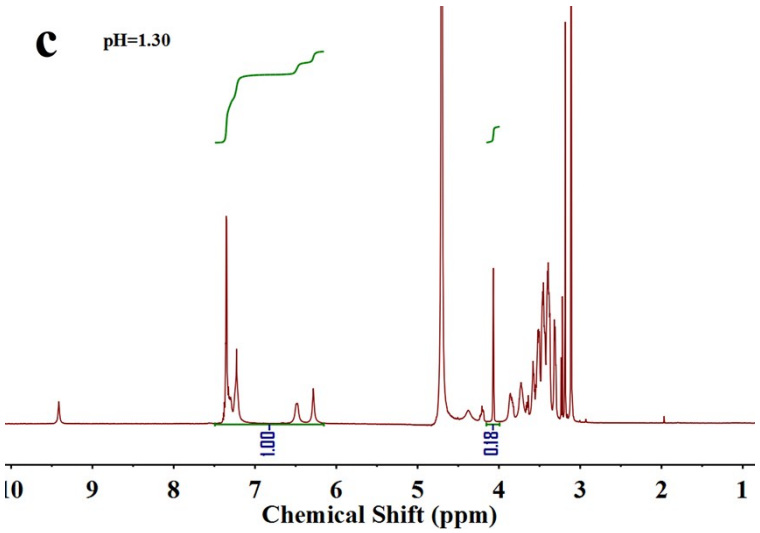
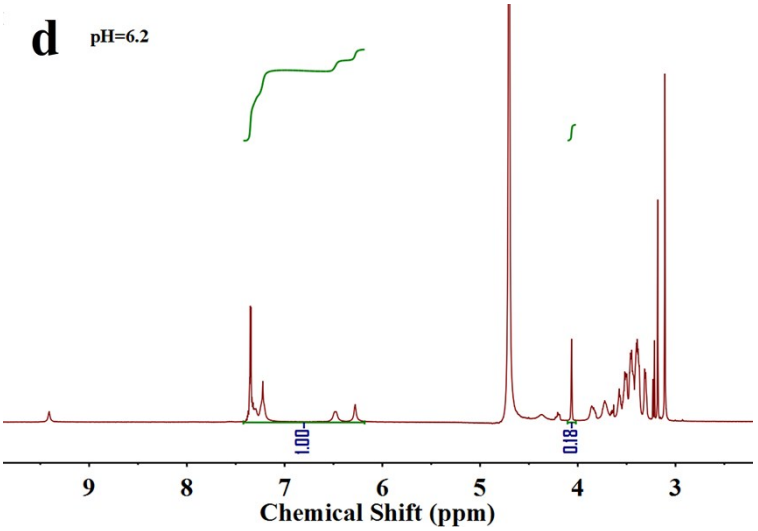


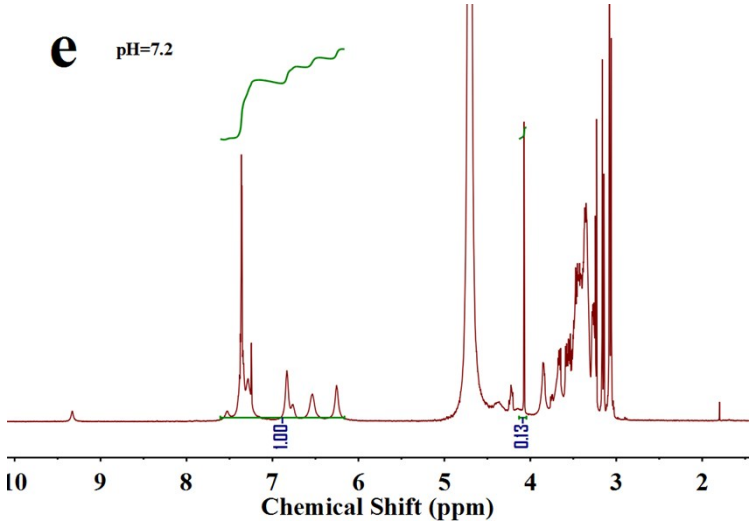
Figure S4. Concentration effcts on the LCST of monomersolution.

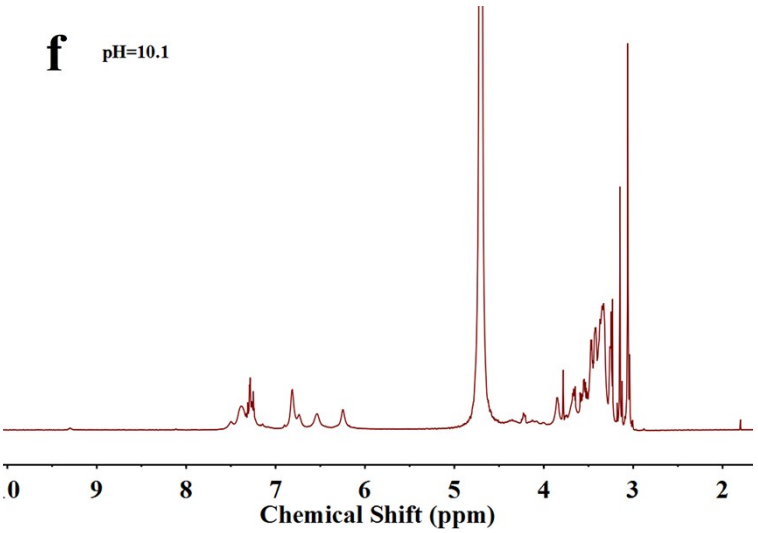

a
7.309
3.794
pH=10.1
7.360
4.076
pH=1.09
10 9 8 7 6 5 4 3 2
Chemical Shift (ppm)


b
pH=10.1
pH=7.2
pH=6.2
pH=1.3
10 9 8 7 6 5 4 3 2 1 0
Chemical Shift (ppm)


c
pH=1.30
1.00
2.18
10 9 8 7 6 5 4 3 2 1
Chemical Shift (ppm)


d
pH=6.2
1.00
0.18
9
8
7
6
5
4
3
Chemical Shift (ppm)


e
pH=7.2
1.00
0.13
10
9
8
7
6
5
4
3
2
Chemical Shift (ppm)


f
pH=10.1
0
9
8
7
6
5
4
3
2
Chemical Shift (ppm)

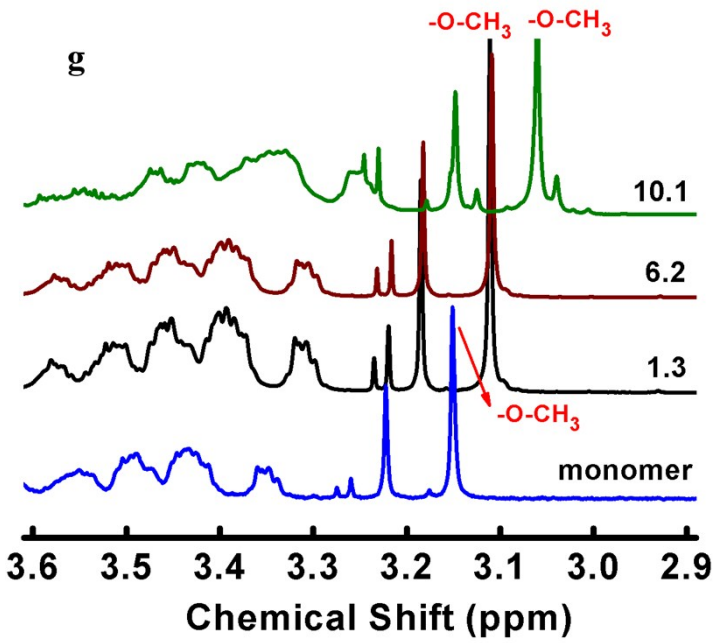


Figure S5. The chemical shift of benzylamine (a) and the chemical shift (b) of model system (the model self-assembly system were form by use the benzylamine to assembly with G1-Azo-CHO to illustrate the formation of hydrogen and imine bonds); The integral of chemical shift details of model system were in (c-f)； (g) the details of chemical shift of monomer and the model system in pH=1.3,6.2,10.1.

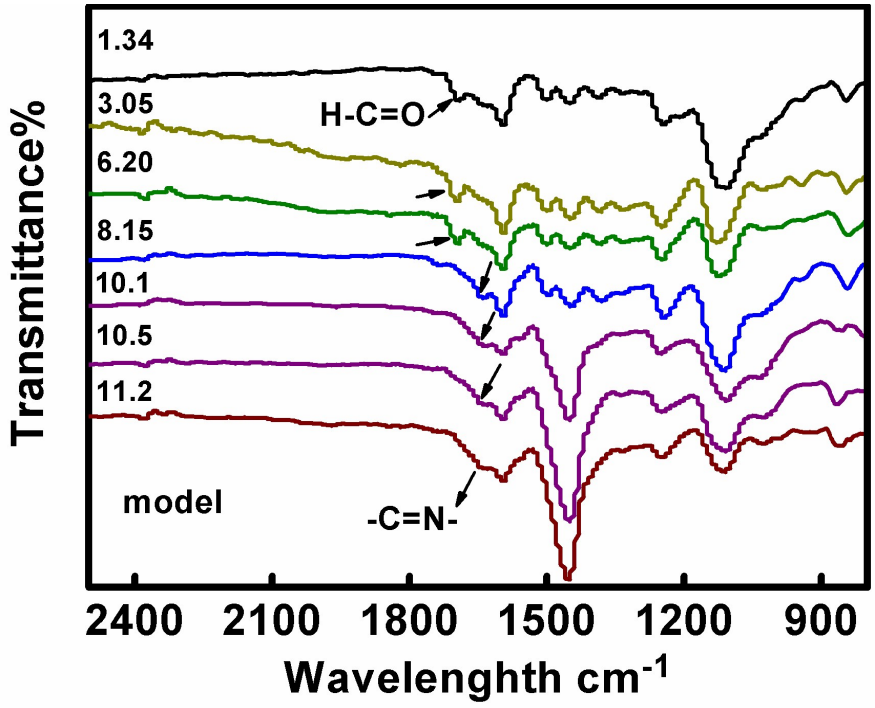


Figure S6. FT-IR spectrum of the model system in different pH.

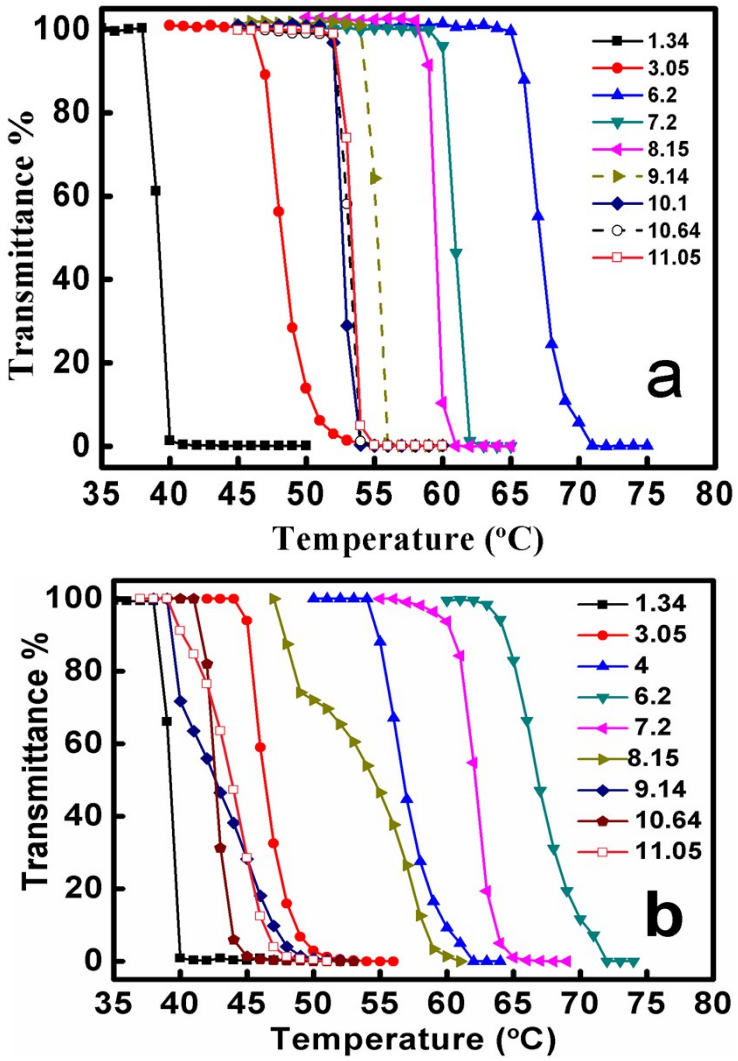


Figure S7. (a) The effect of pH on the LCST of dendronized copolymers aqueous solution before UV irradiation; (b)The effect of pH on the LCST of dendronized copolymers aqueous solution after UV irradiation.

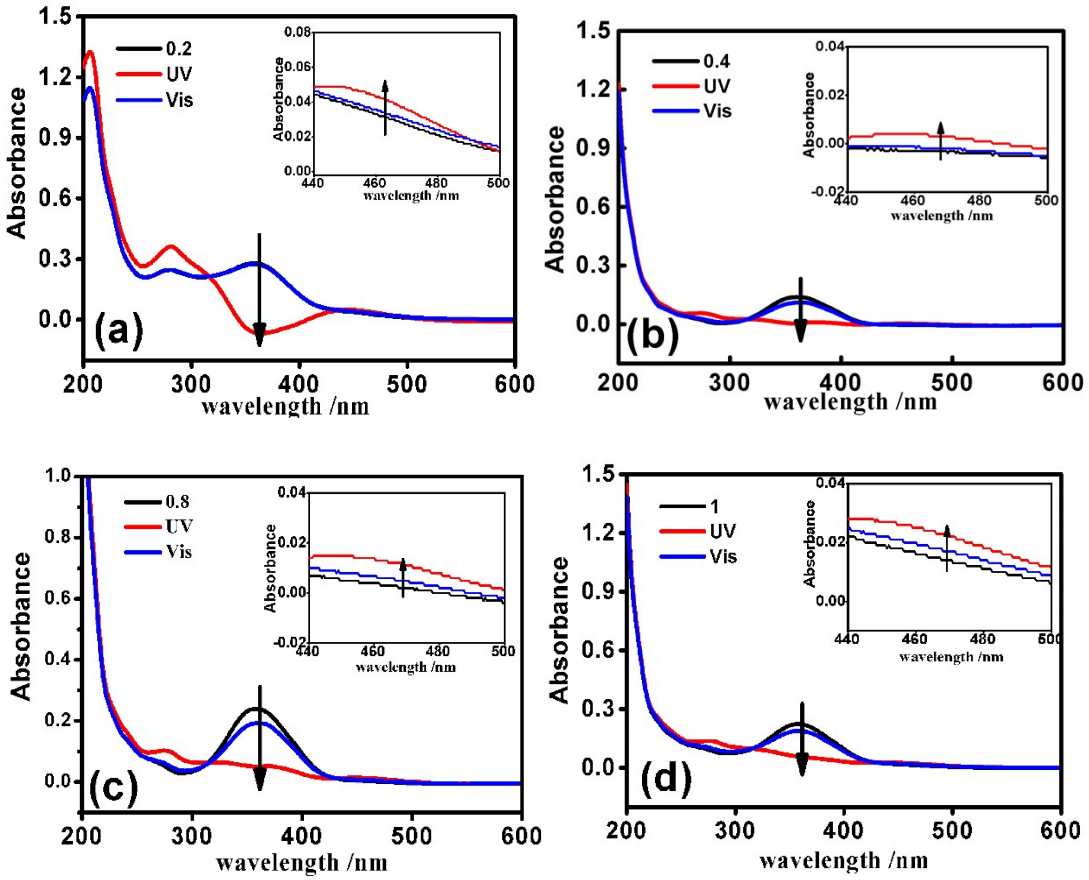


Figure S8. Absorption spectrums of the self-assembly polymer at the molar ratio 0.2:1 (a), 0.4:1 (b), 0.8:1 (c), 1:1 (d).

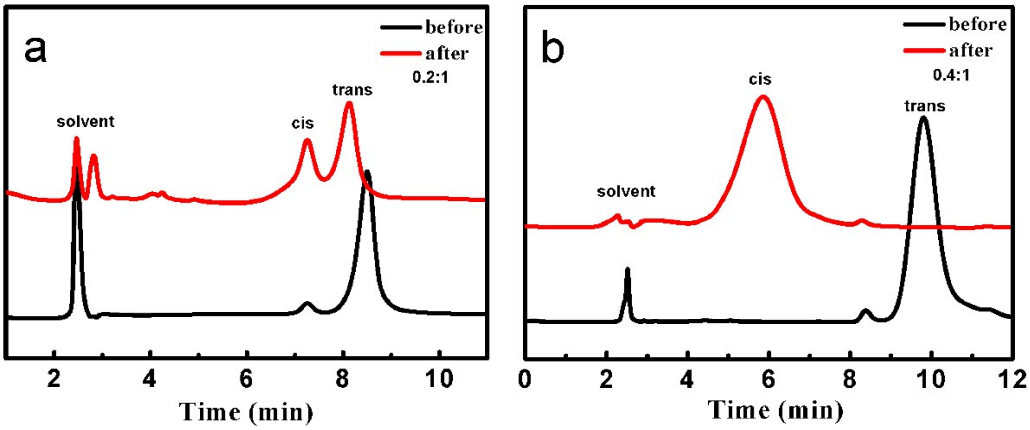


Figure S9. HPLC outflow curve of the copolymer (a) $P_{0.2}$ and (b) $P_{0.4}$ solution at the molar ratio 1:1(CH_3OH/H_2O: 80/20).

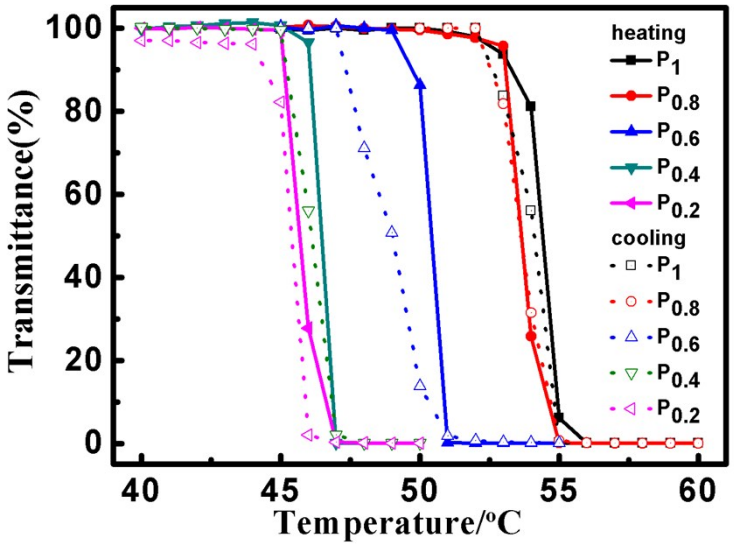


Figure S10. Thermo-responsive of self-assembly polymers with different CHO/NH_2 ratio in heating (solid line) and cooling (dot line) process.

Table S1. Raw material molar ratios for self-assembly of supramoleculardendronized copolymers

Samples	Concentration of total materials (mg/mL)	Mw of the copolymers (g/mol)	n_{CHO}/n_{NH2} (mol/mol)[a]	LCST (°C)	
				heating	cooling
1	5.0	7.1×10^4	1:1	54.4	54.1
2	5.0	5.9×10^4	0.8:1	53.5	53.5
3	5.0	4.7×10^4	0.6:1	50.3	49.0
4	5.0	3.5×10^4	0.4:1	46.5	46.1
5	5.0	2.4×10^4	0.2:1	45.6	45.3