Supplementary Information

Controllable Transformation of UCST and LCST Behaviors in Polyampholyte Hydrogels Enabled by Association-Disassociation Theory-Based Switch Mechanism

Wenhao Du [*a, b, c], Shixiong Sun [a, c], Zhixin Zhao [b,d], Benbo Zhao [*a, c], Xi Zhang [*b]

a School of Chemistry and Chemical Engineering, North University of China, Taiyuan 030051, People's Republic of China

b State Key Laboratory of Polymer Materials Engineering, Sichuan University, Chengdu 610065, People's Republic of China

c Dezhou Industrial Technology Research Institute of North University of China, Dezhou 253034, China

d School of Material Science and Engineering, Xihua University, Chengdu 610039, People's Republic of China

[*] Corresponding author.
Dr. Wenhao Du, E-mail address: Wenhao_Du@outlook.com; Tel: +8615198152955
Dr. Benbo Zhao, E-mail address: zhaobenbo@163.com; Tel: +8613703581570
Prof. Xi Zhang, E-mail address: zhangxi6352@163.com; Tel: +8613808072562

Table S1. The experimental ingredients of hydrogels synthesized from AA and DMC.

C_m (mol/L)	f	AA (g)	DMC (g)	DI water (g)
3	0.48	2.07	8.09	18.38
5	0.48	3.46	13.49	17.30
6	0.48	4.15	16.19	16.76
	0.45	4.54	19.97	16.01
	0.46	4.64	19.61	16.08
	0.47	4.74	19.25	16.15
	0.48	4.84	18.88	16.22
	0.49	4.94	18.52	16.30
7	0.50	5.04	18.16	16.37
	0.51	5.14	17.79	16.44
	0.52	5.24	17.43	16.51
	0.53	5.34	17.07	16.59
	0.54	5.44	16.70	16.66
	0.55	5.54	16.34	16.73
	0.45	4.86	21.40	15.72
	0.46	4.97	21.01	15.80
	0.47	5.08	20.62	15.88
	0.48	5.18	20.23	15.95
	0.49	5.29	19.84	16.03
7.5	0.50	5.40	19.45	16.11
	0.51	5.51	19.06	16.19
	0.52	5.62	18.68	16.27
	0.53	5.72	18.29	16.34
	0.54	5.83	17.90	16.42
	0.55	5.94	17.51	16.50
	0.45	5.18	22.83	15.44
	0.46	5.30	22.41	15.52
	0.47	5.41	22.00	15.60
	0.48	5.53	21.58	15.68
	0.49	5.64	21.17	15.77
8	0.50	5.76	20.75	15.85
	0.51	5.88	20.34	15.93
	0.52	5.99	19.92	16.02
	0.53	6.11	19.51	16.10
	0.54	6.22	19.09	16.18
	0.55	6.34	18.68	16.27
	0.45	5.83	25.68	14.86
	0.46	5.96	25.21	14.96
9	0.47	6.09	24.74	15.05
	0.48	6.22	24.28	15.14
	0.49	6.35	23.81	15.24

	0.50	6.48	23.34	15.33
	0.51	6.61	22.88	15.42
	0.52	6.74	22.41	15.52
	0.53	6.87	21.94	15.61
	0.54	7.00	21.48	15.70
	0.55	7.13	21.01	15.80
	0.45	6.48	28.53	14.29
	0.46	6.62	28.01	14.40
	0.47	6.77	27.49	14.50
	0.48	6.91	26.98	14.61
	0.49	7.06	26.46	14.71
10	0.50	7.20	25.94	14.81
	0.51	7.34	25.42	14.92
	0.52	7.49	24.90	15.02
	0.53	7.63	24.38	15.12
	0.54	7.78	23.86	15.23
	0.55	7.92	23.34	15.33

Table S2. Different values of hydrogels under different anionic monomer molar fraction.

C_m (mol/L)	f	urea	Average relative molecular weight	Polydispersity
6	0.48	No	4.20×10^3	1.03
7.5	0.48	No	1.85×10^4	1.05
8	0.46	No	1.87×10^4	1.04
8	0.48	No	1.90×10^4	1.05
8	0.53	No	2.30×10^4	1.03
9	0.48	No	1.92×10^4	1.05
10	0.48	No	1.86×10^4	1.04
8	0.48	Yes	1.91×10^4	1.02