Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Thermoresponse and self-assembly of an ABC star quaterpolymer with O_2 and redox dual-responsive Y junctions

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Table S1. Results for RAFT copolymerization of ATL (M_1) and NIPAM (M_2) at various monomer feeds[a]

run	$M_{n,GPC}$ (Da)[b]	Đ[b]	f_1[c]	$m(M_1)$[d]	$m(M_2)$[d]	F_1[e]	x[f]	y[f]
1	2800	1.12	0.10	2.2	15.9	0.122	0.0889	-0.689
2	3480	1.16	0.20	4.8	15.7	0.234	0.205	-0.568
3	2970	1.12	0.30	6.0	11.8	0.337	0.361	-0.415
4	2830	1.21	0.40	6.8	9.0	0.430	0.589	-0.217
5	3160	1.16	0.50	9.5	8.6	0.525	0.905	0.0952
6	3280	1.22	0.60	10.2	6.5	0.611	1.43	0.545

[a] Polymerization conditions: $([ATL]_0 + [NIPAM]_0):[BHBCP]_0:[AIBN]_0 = 200:1:0.1$, $[M]_0 = 3.0$ mol L^{-1}, in dioxane at 70 °C for 2 h. [b] Apparent molecular weight and dispersity estimated by GPC. [c] Molar fraction of ATL in monomer feed. [d] Number of monomer units determined by ^{1}H NMR analysis, $m(ATL) = 2I_{4.2\text{-}5.1}/I_{7.95} - 1$, and $m(NIPAM) = 2I_{3.8\text{-}4.1}/I_{7.95}$. [e] Molar fraction of ATL unit in copolymer determined by ^{1}H NMR analysis. [f] $x = (1/F_1 - 1)(f_1/f_2)^2$, and $y = (2 - 1/F_1)(f_1/f_2)$.

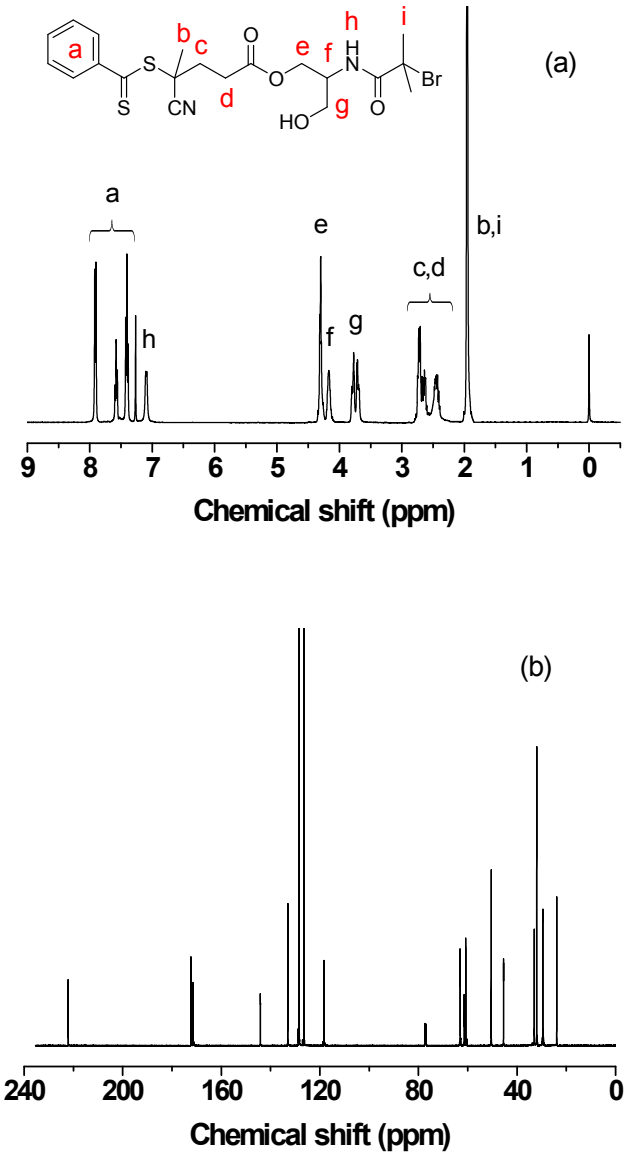

Fig. S1 ^{1}H (a) and ^{13}C (b) NMR spectra of 2-bromoisobutyrylamido-3-hydroxypropyl 4-(benzodithioyl)-4-cyanopentanoate (BHBCP).

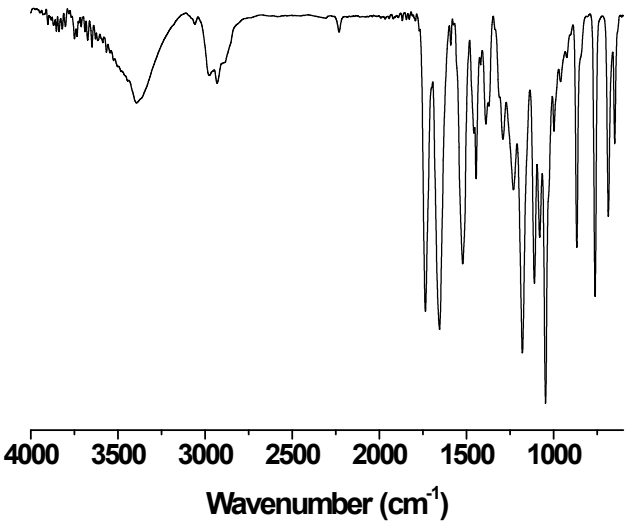

Fig. S2 FT-IR spectrum of BHBCP.

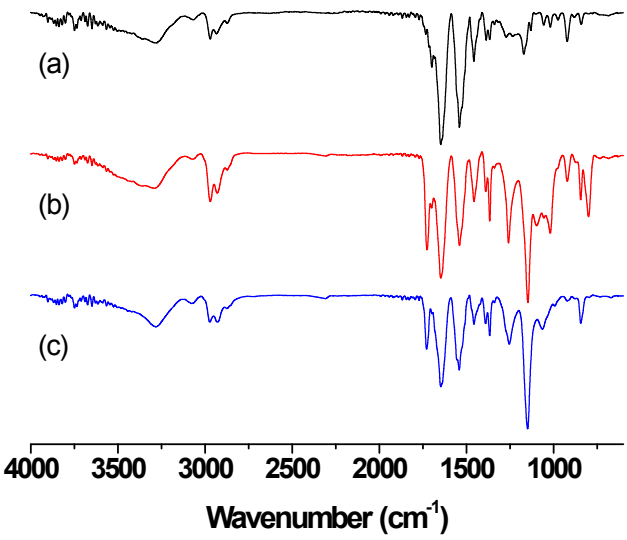

Fig. S3 FT-IR spectra of P(ATL-*co*-NIPAM)-*b*-PCL (a), P(ATL-*co*-NIPAM)-PCL-P*t*BA star (b) and P(TAHB-*co*-NIPAM)-PCL-P*t*BA star (c).

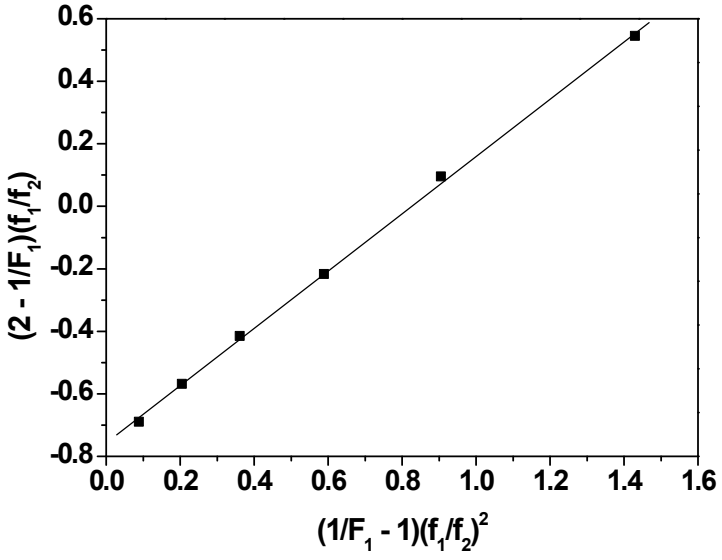

Fig. S4 Fineman-Ross plots for RAFT copolymerization of ATL and NIPAM in dioxane at 70 °C.

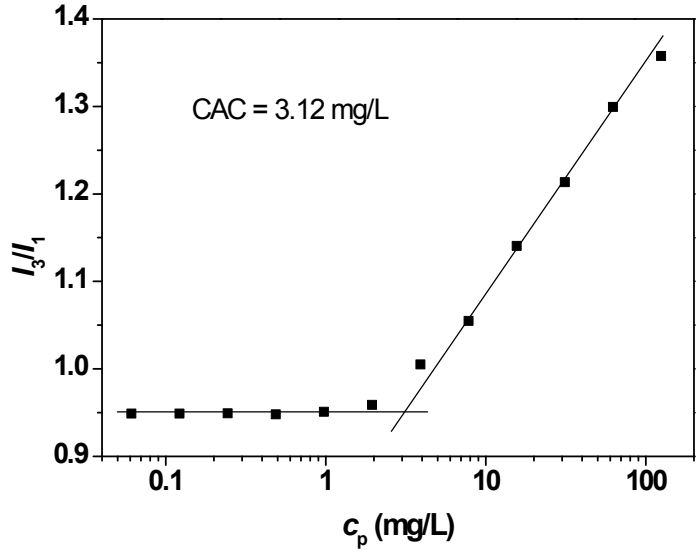

Fig. S5 Dependence of intensity ratio (I_3/I_1) on polymer concentration of A_2BC_2 star in aqueous solution.

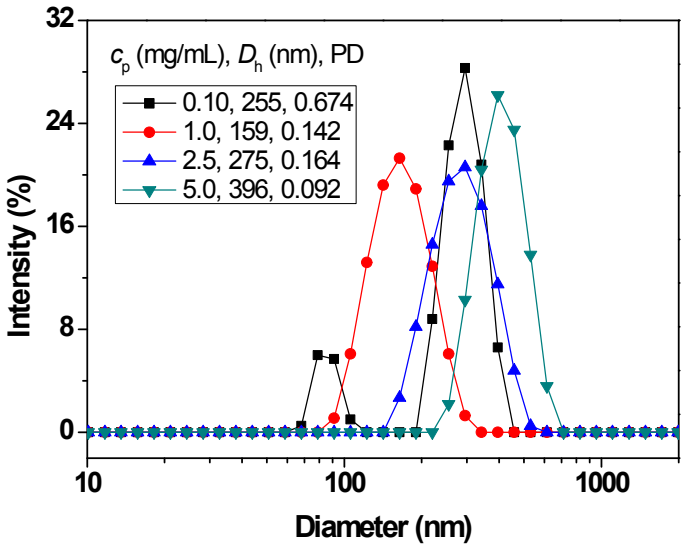

Fig. S6 Influence of polymer concentration on DLS plots of A_2BC_2 aggregates formed in aqueous solution at 25 °C.

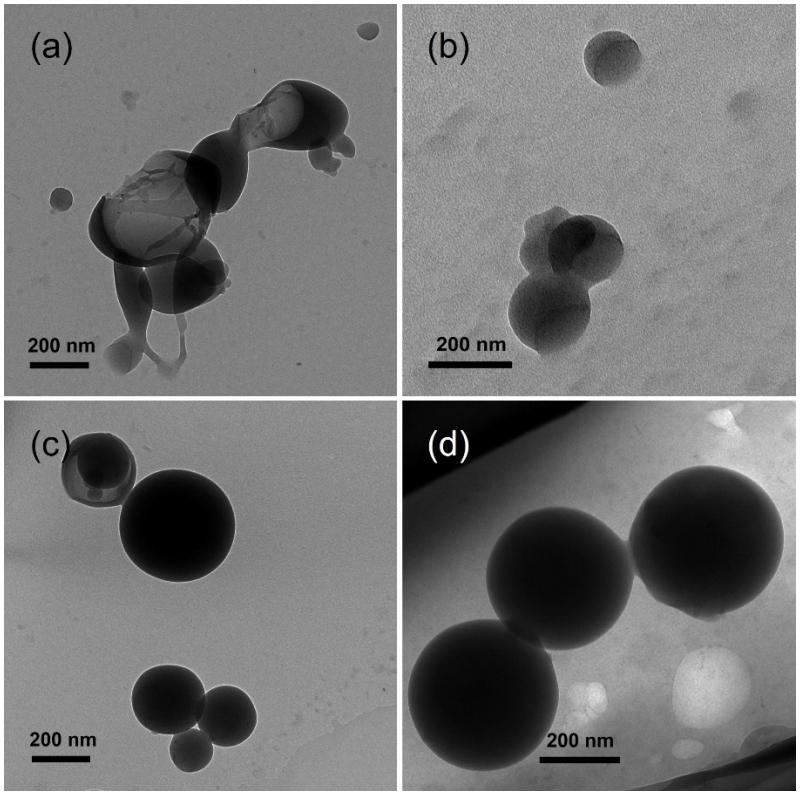

Fig. S7 TEM images of A_2BC_2 aggregates formed in aqueous solution at 25 °C, where c_p was 0.10 (a), 1.0 (b), 2.5 (c) and 5.0 mg mL^{-1} (d).

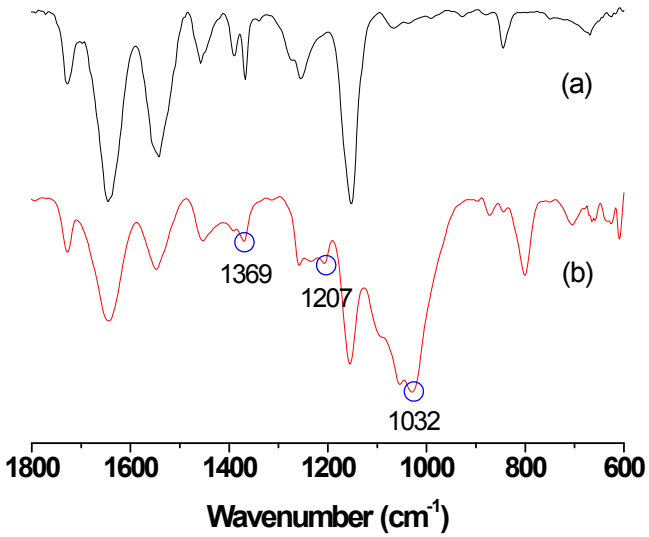

Fig. S8 FT-IR spectra of P(TAHB-*co*-NIPAM)-PCL-PAA star before (a) and after (b) oxidation in the range of 600-1800 cm^{-1}.