Supporting Information

Facile Synthesis of Hyperbranched and Star-Shaped Polymers by RAFT Polymerization Based on a Polymerizable Trithiocarbonate

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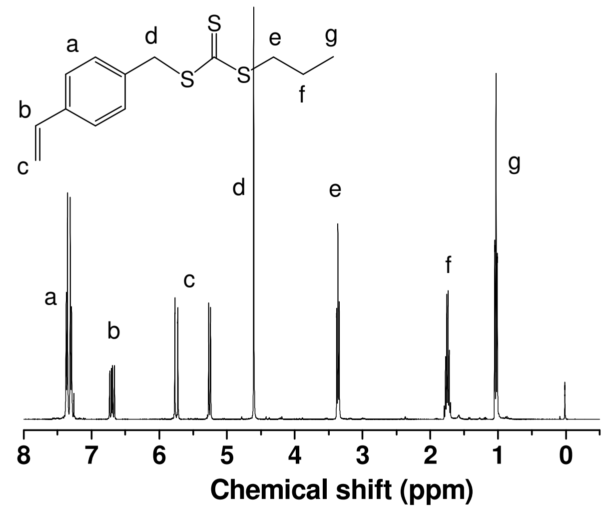

Figure S1. ^{1}H NMR spectra of VBPT.

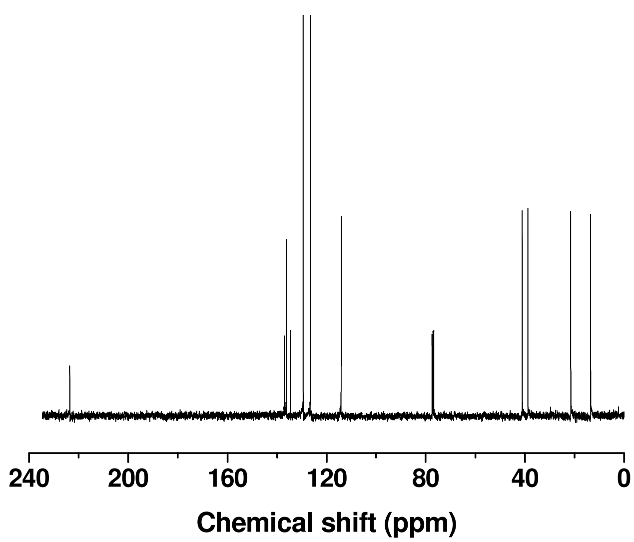

Figure S2. ^{13}C NMR spectra of VBPT.

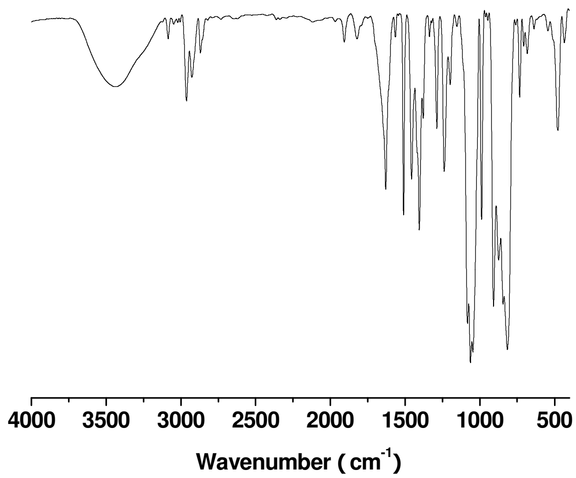

Figure S3. IR spectra of VBPT.

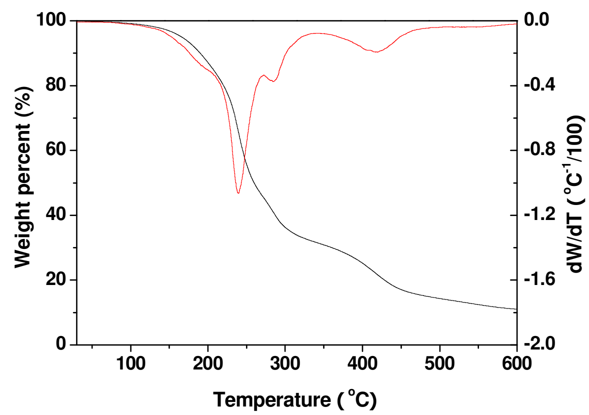

Figure S4. Depedence of weight loss and dW/dT of VBPT on temperature.

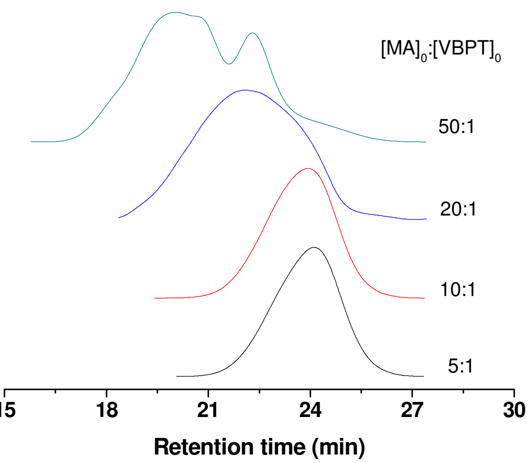

Figure S5. GPC traces of poly(VBPT-*co*-MA) branched copolymers synthesized by RAFT copolymerization at constant AIBN concentration ($[AIBN]_0$ = 3.0 mmol/L). Samples were listed in runs 16 to 19 of Table 1.

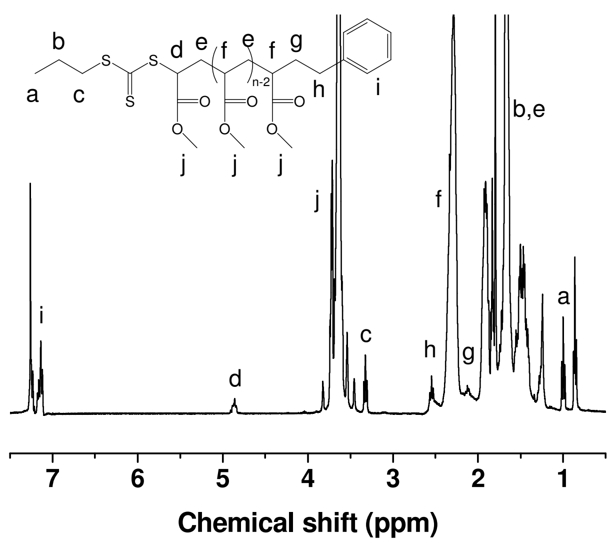

Figure S6. ^{1}H NMR spectra of PMA synthesized by RAFT polymerization mediated by S-benzyl S'-propyltrithiocarbonate (BPTT) ($[MA]_0:[VBPT]_0:[AIBN]_0$ = 100:1:0.1, $[MA]_0$ = 3.0 mol/L, in toluene at 60 ^{o}C for 18 h, M_n(GPC) = 4870, PDI = 1.20, DP(NMR) = 54.0, M_n(NMR) = 4890).

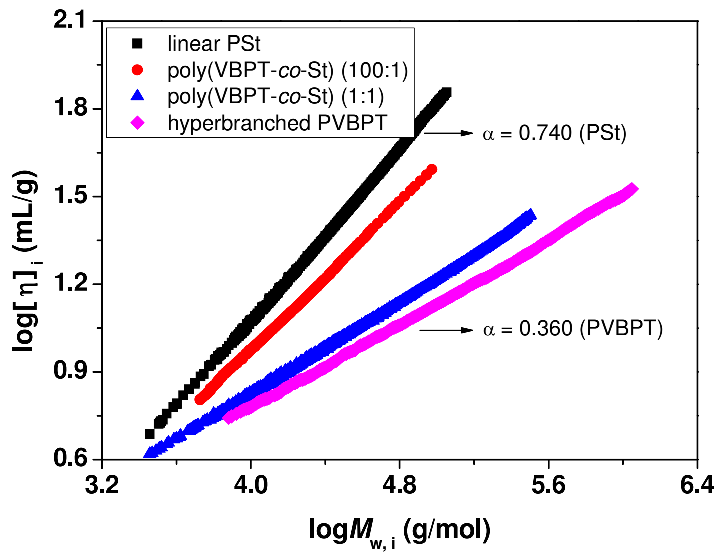

Figure S7. Mark-Houwink-Sakurada plots of poly(VBPT-*co*-St) branched copolymers obtained by RAFT copolymerization, hyperbranched PVBPT and linear PSt. The resulting α values were determined from the slope.

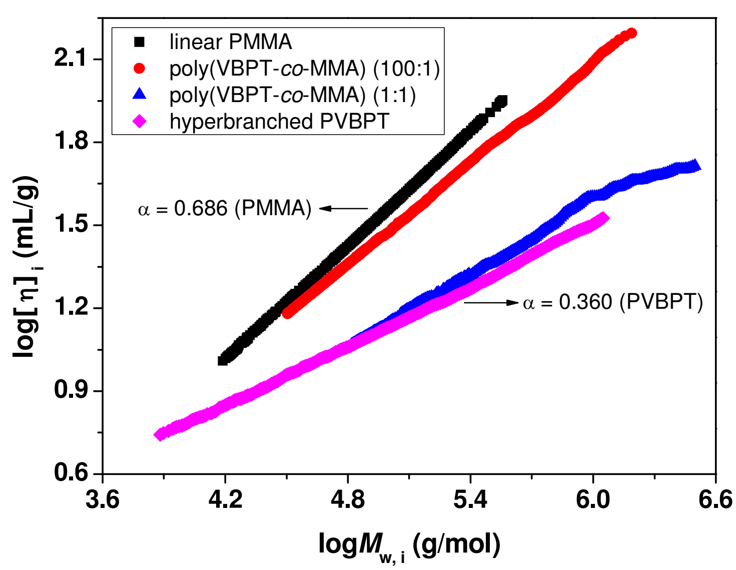

Figure S8. Mark-Houwink-Sakurada plots of poly(VBPT-*co*-MMA) branched copolymers obtained by RAFT copolymerization, hyperbranched PVBPT and linear PMMA. The resulting α values were determined from the slope.

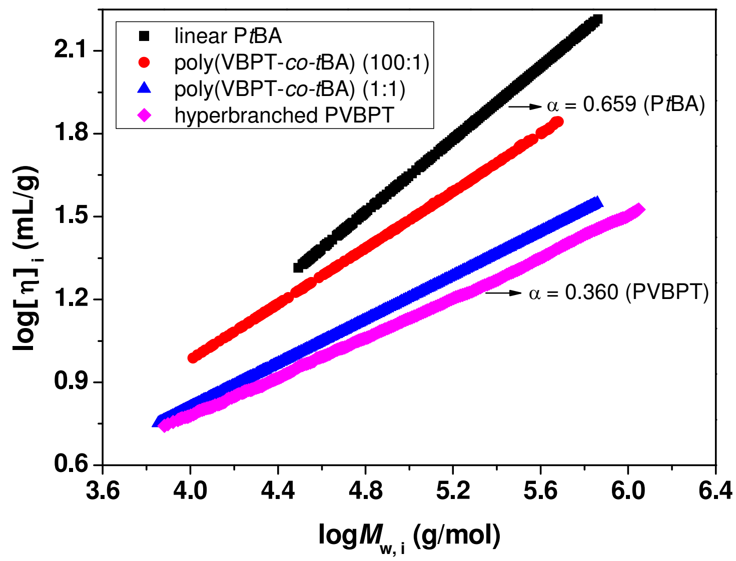

Figure S9. Mark-Houwink-Sakurada plots of poly(VBPT-*co*-*t*BA) branched copolymers obtained by RAFT copolymerization, hyperbranched PVBPT and linear P*t*BA. The resulting α values were determined from the slope.

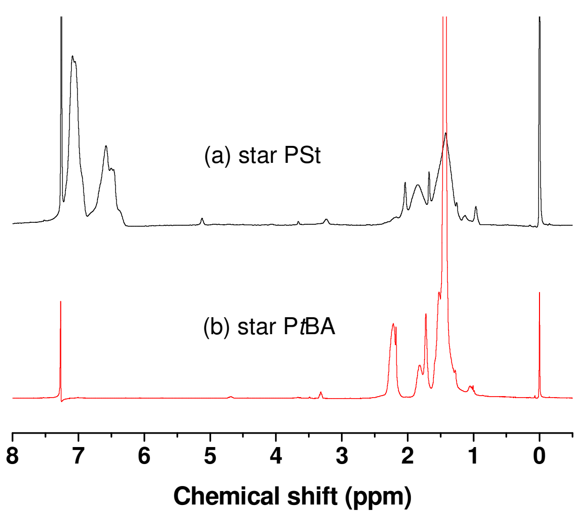

Figure S10. ^{1}H NMR spectra of star-shaped PSt and P*t*BA with a poly(VBPT-*co*-MA) branched core.

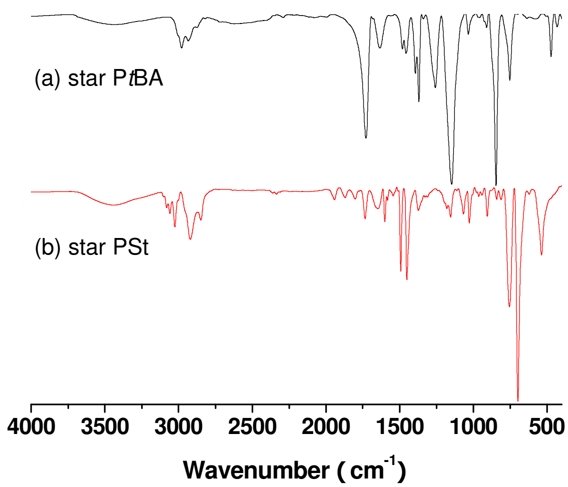

Figure S11. IR spectra of star P*t*BA (a) and PSt (b) with a branched core of poly(VBPT-*co*-MA).

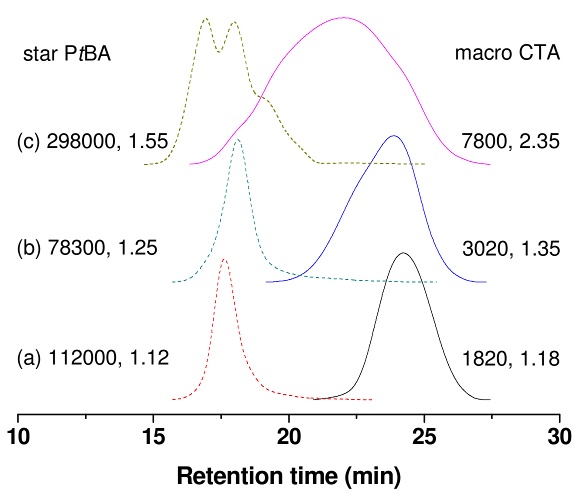

Figure S12. GPC traces of poly(VBPT-*co*-MA) branched macro CTA (solid line) and star-shaped P*t*BA with a branched core (dashed line) synthesized by runs 9 (a), 7 (b) and 11 (c) as listed in Table 6, and CTA functionality of various macro CTAs were 7.26, 13.0 and 55.8, respectively.