

Synthesis of Sequence-Determined Bottlebrush Polymers Based on Sequence

Determination in Living Anionic Copolymerization of Styrene and Dimethyl(4-(1-phenylvinyl)phenyl)silane

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Table S1. The results of taken samples during copolymerization of styrene and DPE-SiH (**G4**, **G6**, and **G10**) with monomer molar feed ratio varying as styrene:DPE-SiH= 4, 6, 3.

sample ^a	Time [min]	M_n^b ($/10^3$)	PDI ^b	N_S/N_D^c	N_D^d	N_S^e	Con. DPE ^g [%]	Con. st ^h [%]
G4	45	2.1	1.08	1.29	5.6	7.6	57.9	19.5
	60	2.5	1.12	1.43	6.4	9.4	66.3	24.1
	75	3.0	1.14	1.77	7.1	12.6	72.9	32.1
	90	3.8	1.17	2.68	7.4	20.7	75.5	52.7
	105	4.8	1.36	3.71	7.7	28.9	78.9	73.8
	120	5.2	1.37	3.78	8.2	31.6	84.6	80.5
	135	5.6	1.24	3.86	8.7	33.8	89.9	86.1
	150	6.0	1.27	3.93	9.2	37.6	94.7	95.8
	180	6.2	1.29	3.96	9.5	38.8	97.9	98.7
	480	6.4	1.33	4.06	9.7	39.9	100	100
G6	60	4.0	1.12	1.68	9.6	16.6	64.3	17.3
	75	5.6	1.14	2.15	11.9	26.5	80.2	27.7
	90	7.8	1.17	3.42	13.1	45.2	87.6	47.2
	120	12.0	1.27	5.83	14.1	83.0	95.2	86.6
	240	13.2	1.30	6.30	14.7	93.1	99.5	97.1
	480	13.4	1.35	6.40	14.8	94.9	100	100
G10	45	2.2	1.10	1	6.4	6.4	25.5	7.8
	60	2.8	1.17	1.11	7.9	8.82	31.2	10.8
	75	4.0	1.12	1.16	11.1	12.9	44.4	16.1
	90	4.8	1.13	1.27	13.0	16.8	52.2	20.6
	105	5.3	1.12	1.33	14.0	18.7	55.5	23.0
	120	6.3	1.11	1.47	16.0	23.7	63.1	29.0
	135	7.0	1.11	1.58	17.4	27.5	68.6	33.7
	150	8.2	1.14	1.96	18.5	36.4	73.1	44.7
	180	11.0	1.19	2.88	20.4	58.9	80.8	72.3
	210	13.0	1.21	3.11	23.1	71.9	91.4	88.3
	270	14.0	1.23	3.23	24.2	79.1	96.1	96.8
	330	14.1	1.25	3.26	24.5	79.3	97.4	97
	480	14.5	1.26	3.31	24.9	82.4	100	100

^a P(St-co-DPE-SiH) is copolymerized at 50 °C, and the $[M_S]/[M]_D$ for **G4**, **G6**, **G10** was 4, 6, 3,

respectively. ^b Determined by SEC. ^c The ratio of the two monomer units in the number of styrene in each chain, calculated from the ¹HNMR spectra of the copolymers using $N_S:N_D=(6a-9f)/5f$ (1), (a, b, c, d, e, and f stand for the areas of the corresponding peaks). ^d The average number of DPE-SiH in each chain is calculated from the ¹HNMR spectra $N_D=f/d$ (2). ^e The average number of styrene in each chain is calculated from the ¹HNMR spectra $N_S=(6a-9f)/5d$ (3). ^g The relative conversion of DPE-SiH. ^h The relative conversion of St.

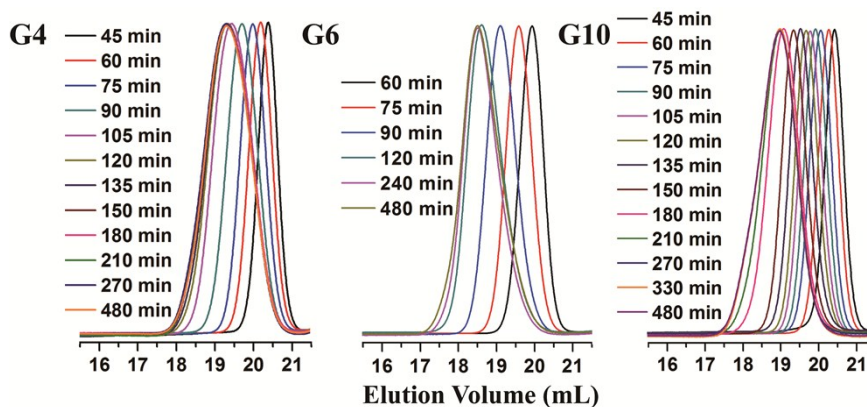
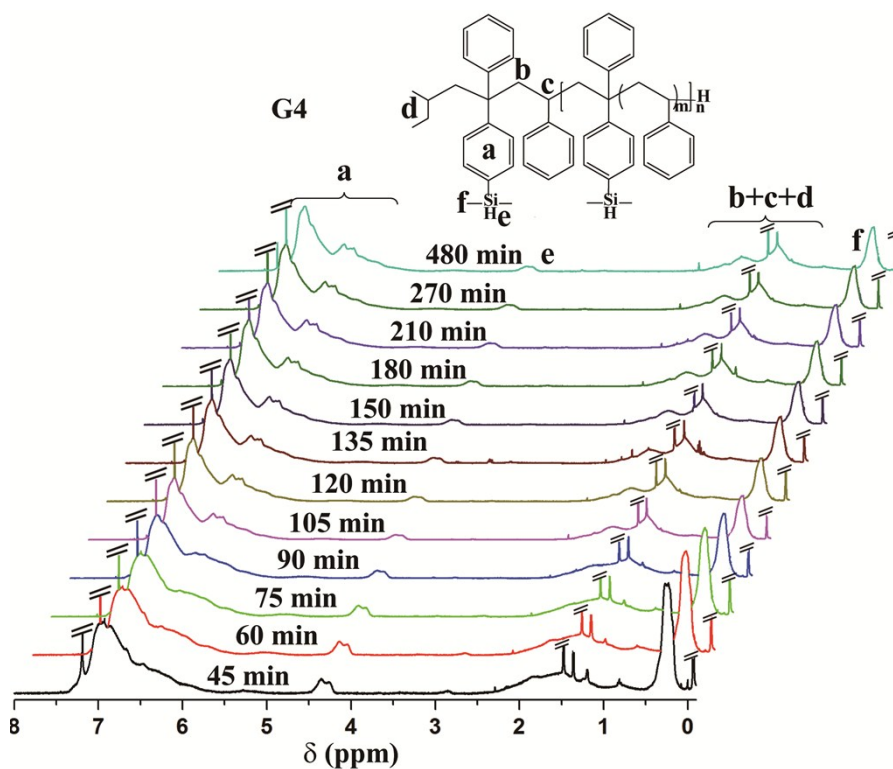


Figure 1S. SEC curves of samples from: G3, G4 and G6.



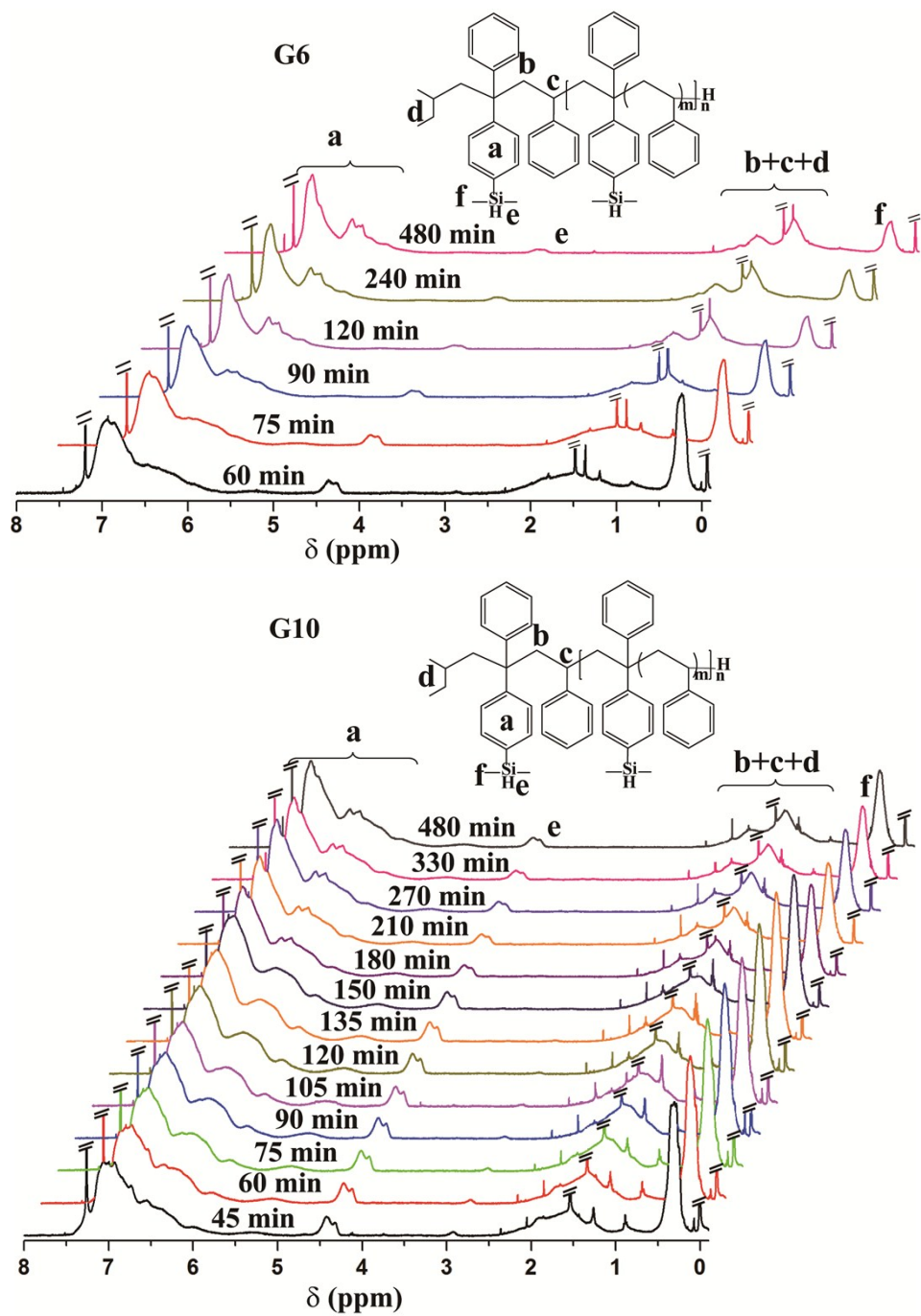
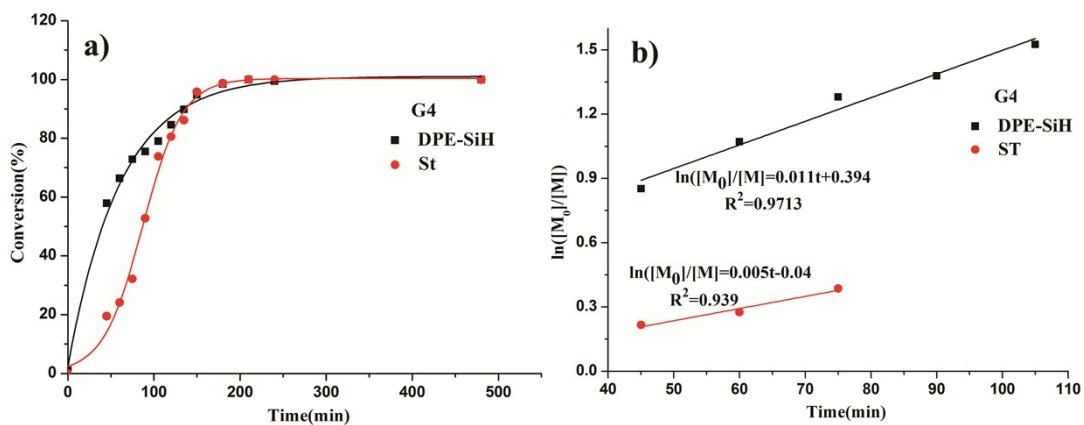


Figure 2S. ¹H NMR spectra of samples from: G4, G6 and G10.



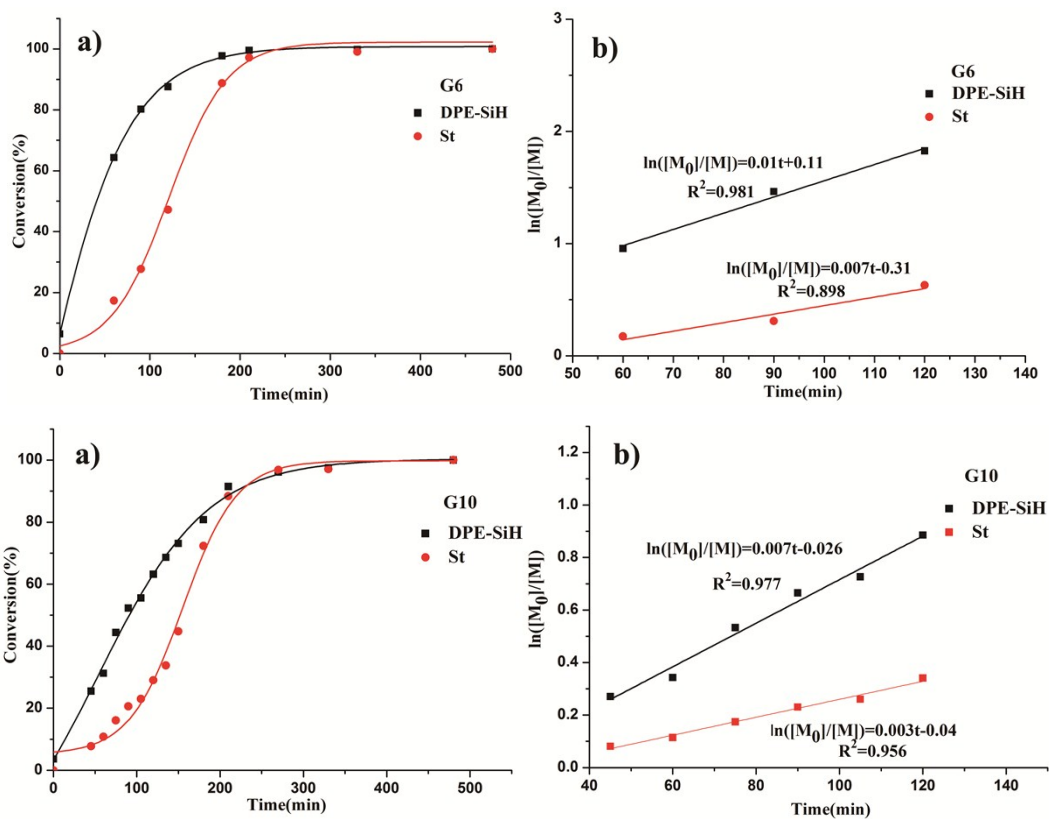


Figure 3S. a) The curves of conversion vs. time and b) liner kinetic curves for **G4**, **G6** and **G10**.

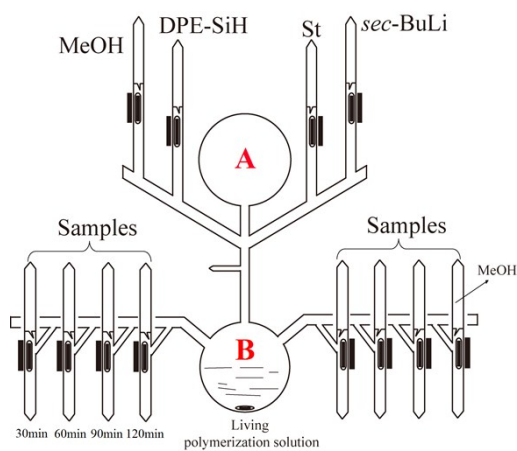


Figure 4S. The timing-sample apparatus for styrene and DPE-SiH.