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A Convenient Synthesis Strategy for Microphase-Separating Functional Copolymers: The Cyclohydrocarbosilane Tool Box

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Supporting information

Tab. S1 Comparison of molar masses for PMSB homopolymers. Anionic ring-opening polymerization of MSB monomer was carried out using *n*-butyllithium as initiator and THF as solvent at -78 °C (No 1-3). Reaction No 4 was performed using *n*-hexane as solvent instead of THF.

No	*n*-BuLi (µmol)	Yield (%)	M_n[a] (g mol^{-1})	M_w[a] (g mol^{-1})	*Đ*
1	15	94 (2h)	20 100	31 600	1.57
2	50	87 (1h)	21 300	34 200	1.60
3	10	99 (5 min)	21 600	35 300	1.63
4	10	86 (5 min)	22 500	41 400	1.84

[a]Molar masses determined by usingSEC measurements with PS calibration

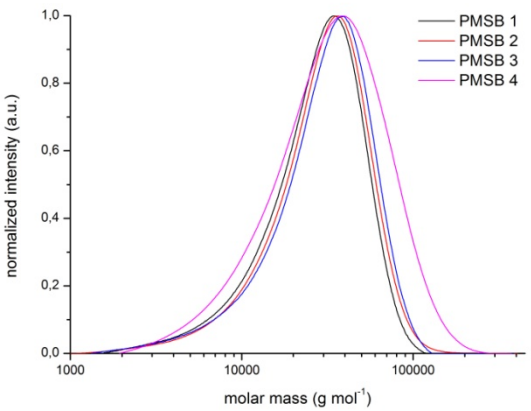

Fig. S1 SEC measurements of PMSB homopolymers in THF obtained by anionic polymerization. Obtained values were calibrated against PS as standards.

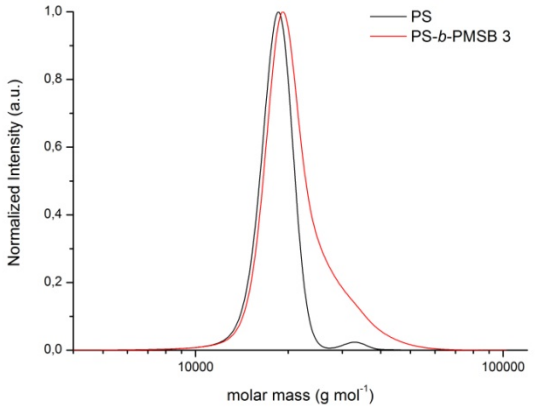

Fig. S2 Molar mass distribution of PS-*b*-PMSB3 (red) and the corresponding PS macroinitiator (black) obtained by using SEC measurement with PS calibration.

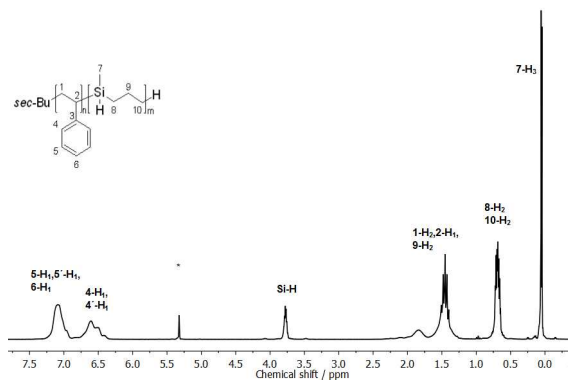

Fig. S3 ^{1}H NMR spectrum of PS-*b*-PMSB3 (in deuterated methylene chloride).

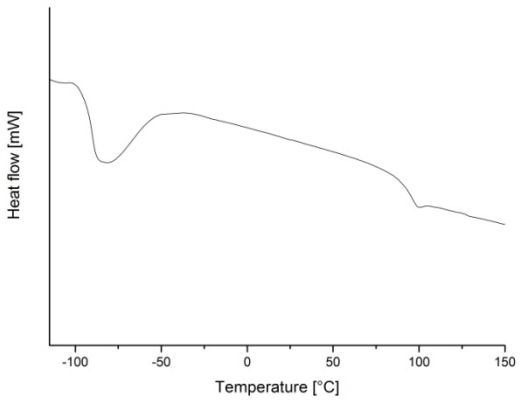

Fig. S4 DSC thermogram of PS-*b*-PMSB3.

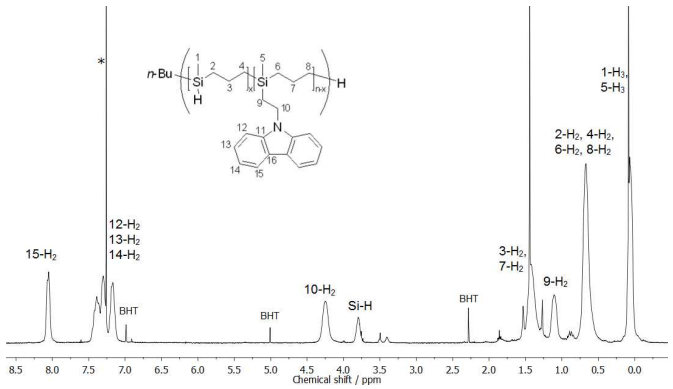

Fig. S5 ^{1}H NMR spectrum of NVC@PMSB1 (room temperature, deuterated chloroform).

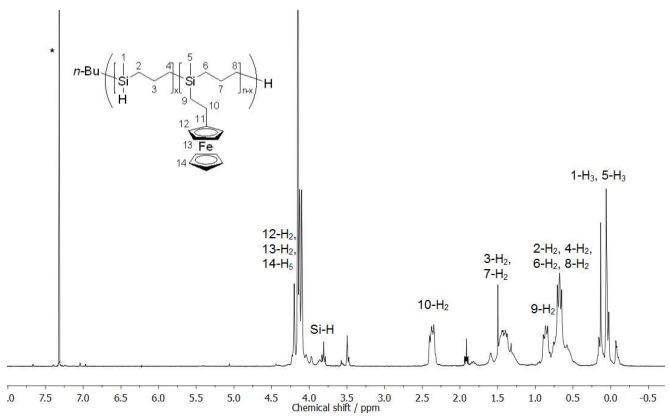

Fig. S6 ^{1}H NMR spectrum of VFc@PMSB1 (room temperature, deuterated chloroform).

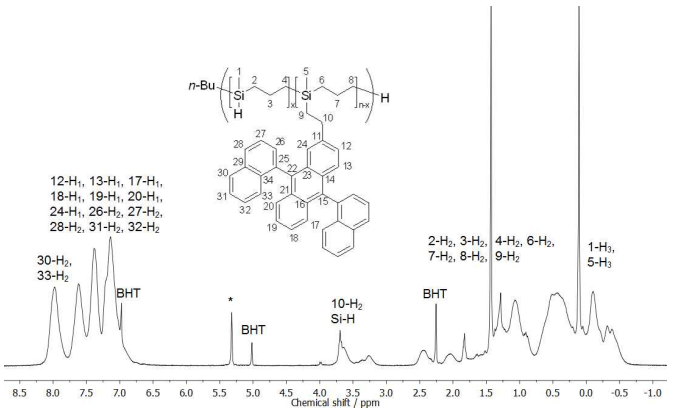

Fig. S7 ^{1}H NMR spectrum of VADN@PMSB1 (room temperature, deuterated methylene chloride).

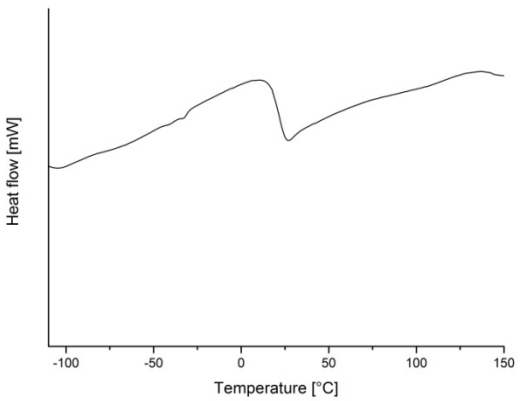

Fig. S8 DSC thermogram of NVC@PMSB.

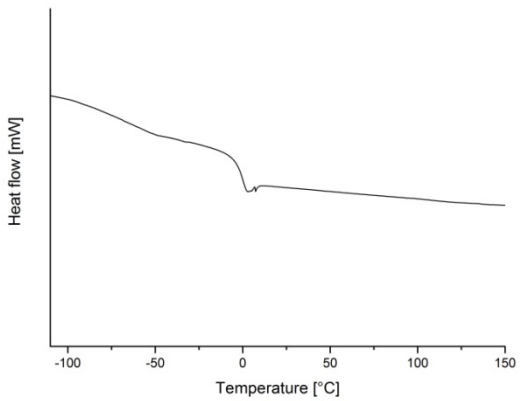

Fig. S9 DSC thermogram of VFc@PMSB.

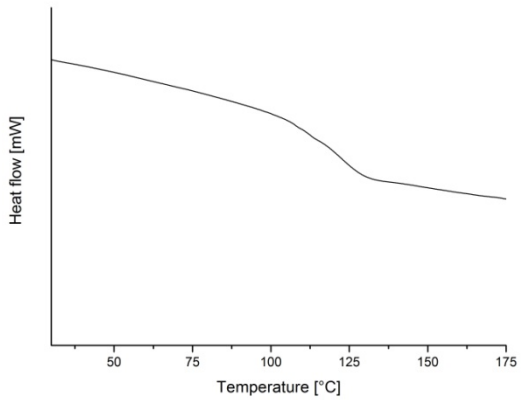

Fig.S10 DSC thermogram of VADN@PMSB.

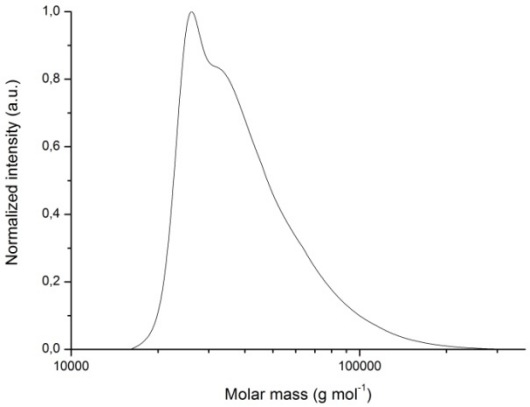

Fig. S11 Molar mass distribution of NVC@PS-*b*-PMSB1 (THF, measurement vs. PS standards).

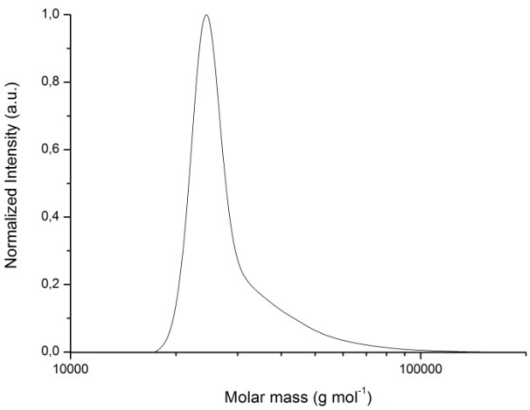

Fig. S12 Molar mass distribution of VFc@PS-*b*-PMSB1 (THF, measurement vs. PS standards).

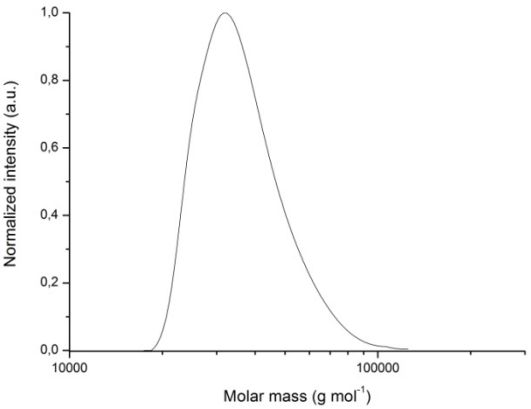

Fig. S13 Molar mass distribution of VADN@PS-*b*-PMSB1 (THF, measurement vs. PS standards).

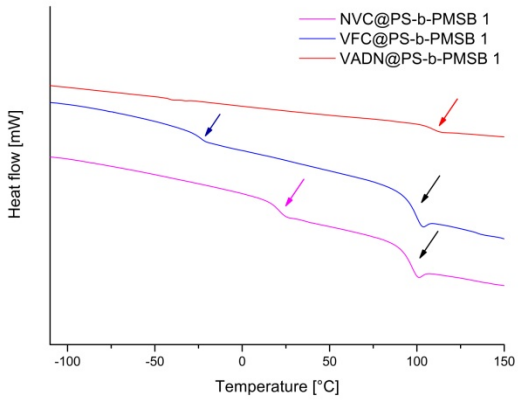

Fig. S14 Stacked DSC thermograms of NVC@PS-*b*-PMSB 1 (pink), VFc@PS-*b*-PMSB 1 (blue), and VADN@PS-*b*-PMSB1 (red).

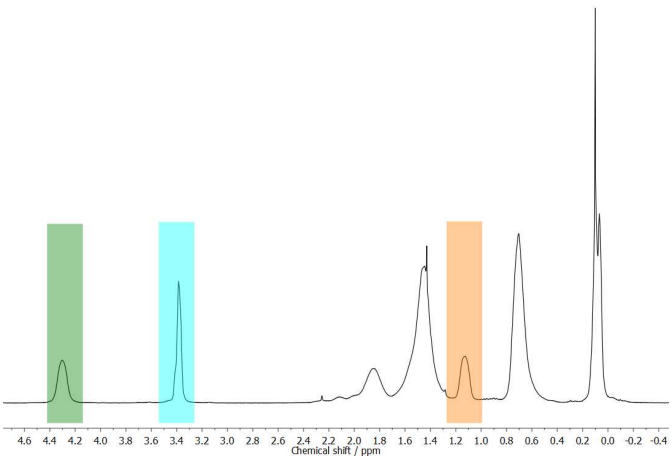

Fig. S15 ^{1}H NMR spectrum of NVC@PS-*b*-PMSB1 precipitated in methanol and left to stir for further 30 min. While the highlighted signals (green and orange) correspond to the expected functionalized hydrosilylated polymer (product B of Fig. 5) the signal at 3.40 ppm can be assigned to a methylsilylether group (by-product C Fig. 5)

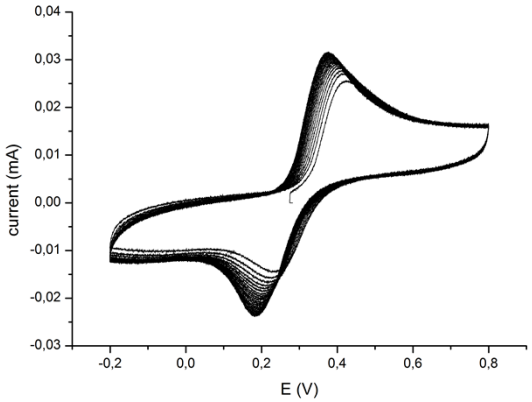

Fig. S16 Cyclic voltammogram of VFc@PMSB1 in acetonitrile and TBAHFP as electrolyte with a scan rate of 100 mV s^{-1} (24 cycles).

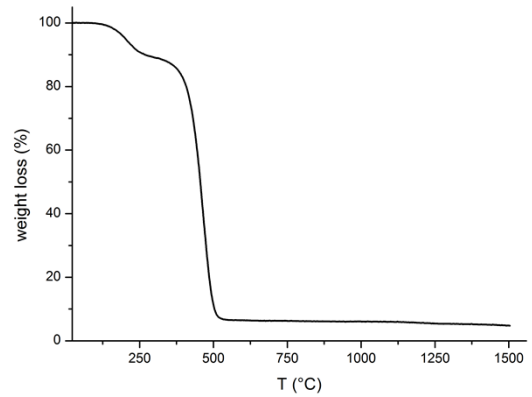

Fig. 17 Exemplary TGA curve for VFc@PMSB1 under argon (heating rate 10 K min^{-1})

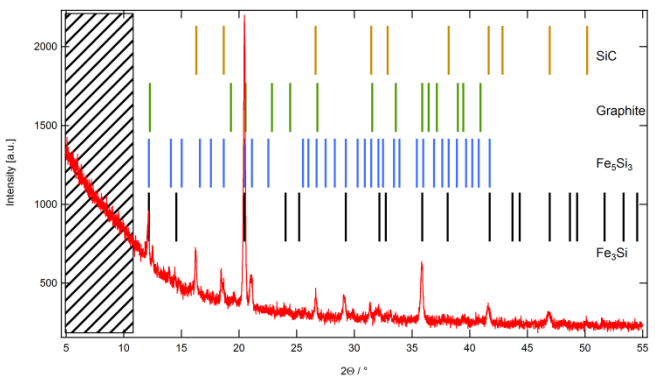

Fig. 18 X-ray diffraction (XRD) pattern of ceramic material obtained by ceramization of VFc@PMSB1 under inert conditions showing a mixture of Fe_3Si_5, Fe_3Si, SiC, and graphite.