Supplementary Material (ESI) for Soft Matter

Supplementary information for the manuscript:

Tracking the interdiffusion of polymers at a molecular level by ^{1}H dipolar filter solid-state NMR under fast magic angle spinning

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^{1}H CRAMPS and ^{13}C CP/MAS NMR spectra of PS and PPO

^{1}H CRAMPS and ^{13}C CP/MAS NMR experiments were performed on a Varian Infinityplus-400 wide-bore (89 mm) NMR spectrometer at a proton frequency of 399.7 MHz using a 4 mm double-resonance HX CP/MAS NMR probe. The magic angle spinning (MAS) was automatically controlled at 9.8 kHz and 4.5 kHz within ± 2 Hz for CRAMPS and ^{13}C CP/MAS experiments, respectively. Detailed information about the CRAMPS experiment could be found else where.[1]

The ^{1}H CRAMPS and ^{13}C CP/MAS NMR spectra were list in Fig. S1 and the corresponding peak assignments were listed in table S1.

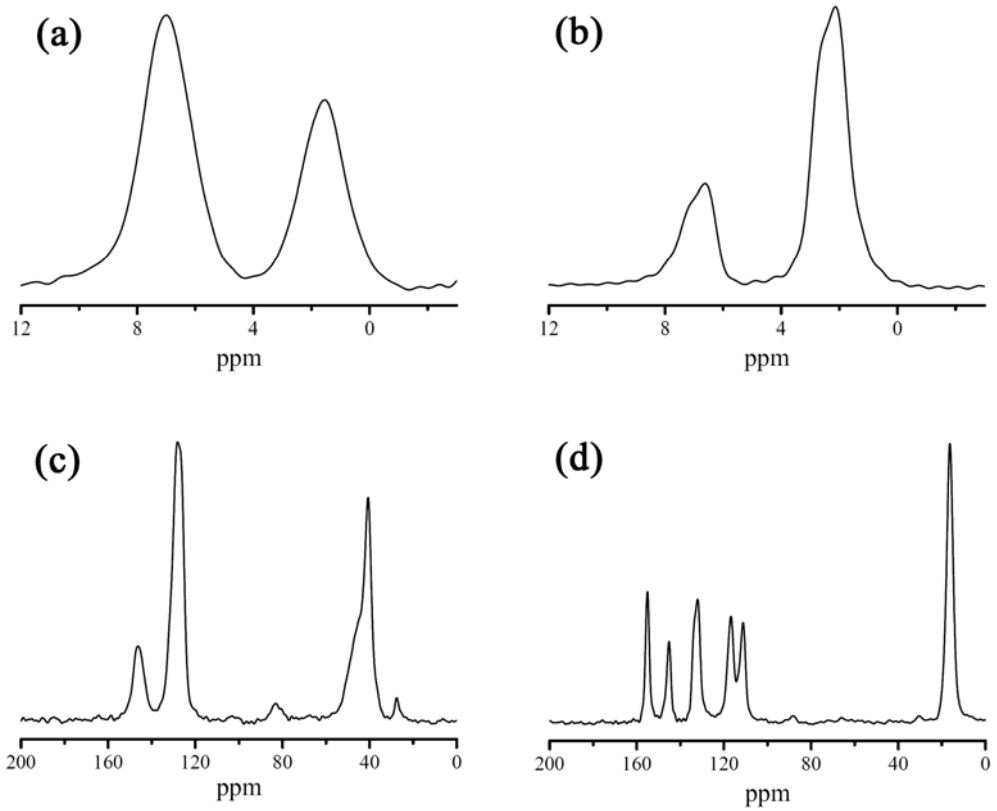

Fig. S1 CRAMPS for (a) PS, (b) PPO and ^{1}H-^{13}C CP/MAS for (c) PS and (d) PPO, respectively. The MAS spinning frequency is 9.8 kHz for CRAMPS and 4.5 kHz for ^{1}H-^{13}C CP/MAS experiments, respectively.

Table 1 Peak assignments for the ^{1}H CRAMPS and ^{13}C CP/MAS spectra of PS and PPO[a]

spectra	sample	chemical shift (ppm)	structure
^{1}H peak	PS	1.5	H7, H8
		7.0	H2, H3, H4, H5, H6
	PPO	2.1	H7, H8
		6.6	H3, H5
^{13}C peak	PS[b]	41.0	C7, C8
		128	C2, C3, C4, C5, C6
		146	C1
	PPO	17.0	C7, C8
		112	C3
		117	C5
		133	C2
		146	C1
		156	C4

[a] Peak numbers refer to Figure S2. [b] Peaks at 27 ppm and 83 ppm originate from unknown impurities.

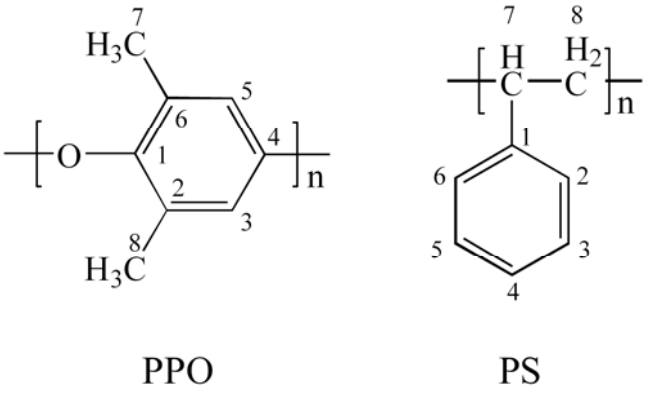

Fig. S2 Chemical structure of PPO and PS.

1. B. Li, L. Xu, Q. Wu, T. Chen, P. Sun, Q. Jin, D. Ding, X. Wang, G. Xue and A. C. Shi, *Macromolecules*, 2007, **40**, 5776-5786.