Supplementary information

Synthesis of Helical Poly(phenylacetylene) Derivatives Bearing Diastereomeric Pendants for Enantioseparation by HPLC

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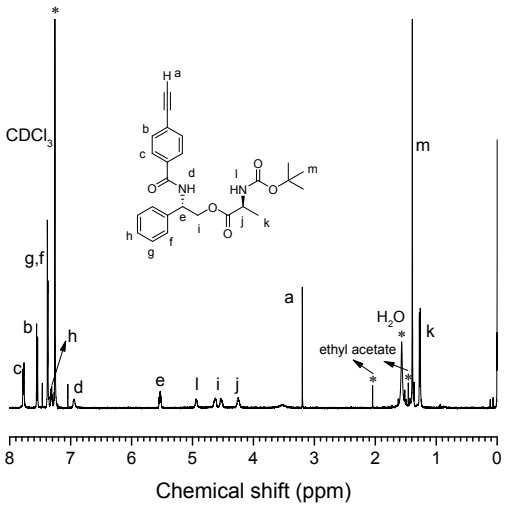

Fig. S1 ^{1}H NMR spectra of **PA-1a** in $CDCl_3$ at 20 °C.

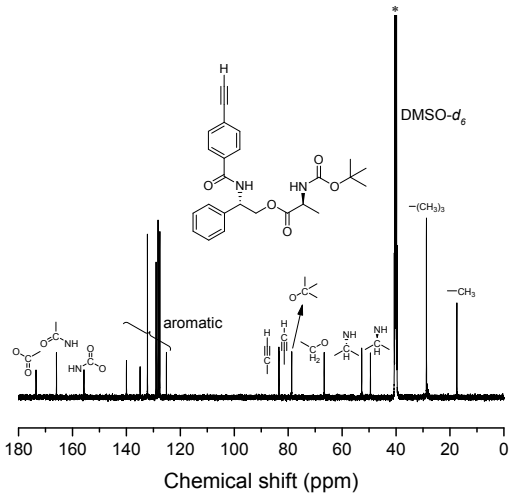

Fig. S2 ^{13}C NMR spectra of **PA-1a** in DMSO-d_6 at 20 °C.

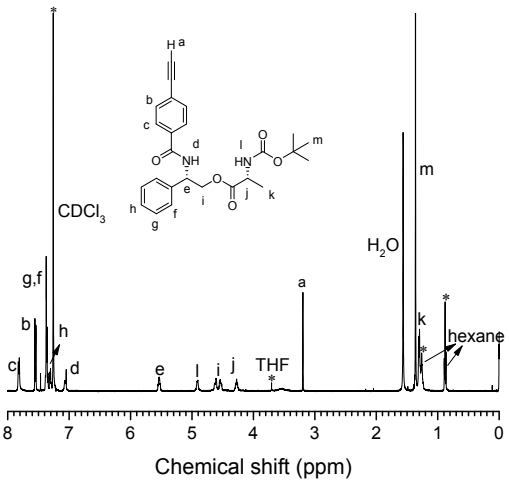

Fig. S3 ^{1}H NMR spectra of **PA-1b** in $CDCl_3$ at 20 °C.

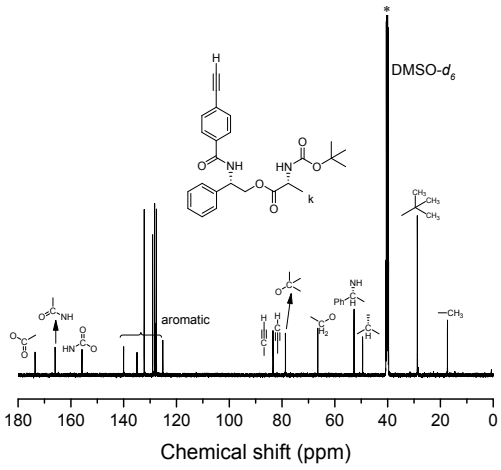

Fig. S4 ^{13}C NMR spectra of **PA-1b** in DMSO-d_6 at 20 °C.

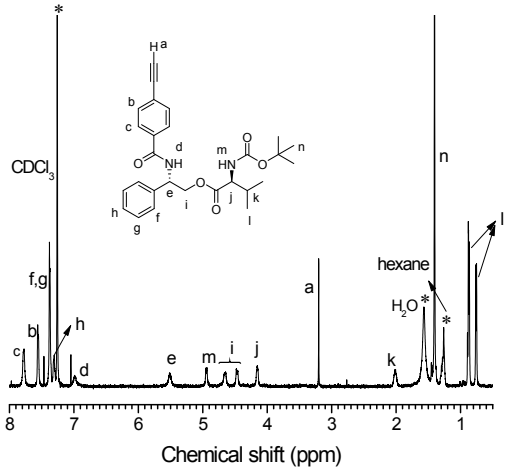

Fig. S5 ^{1}H NMR spectra of **PA-2a** in $CDCl_3$ at 20 °C.

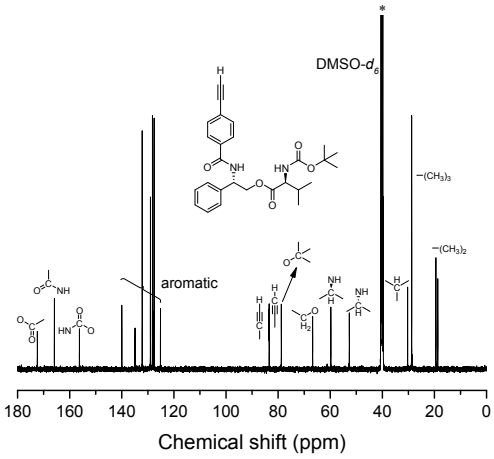

Fig. S6 ^{13}C NMR spectra of **PA-2a** in DMSO-d_6 at 20 °C.

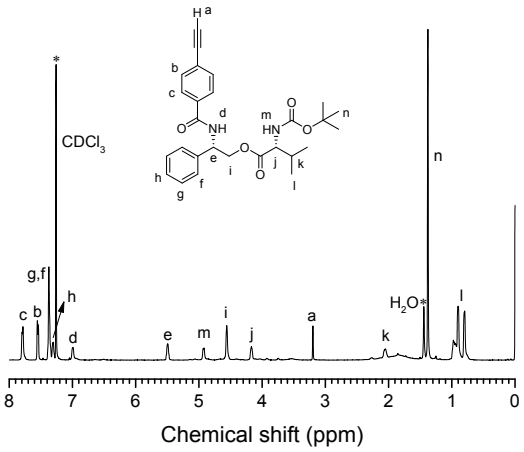

Fig. S7 ^{1}H NMR spectra of **PA-2b** in DMSO-d_6 at 20 °C.

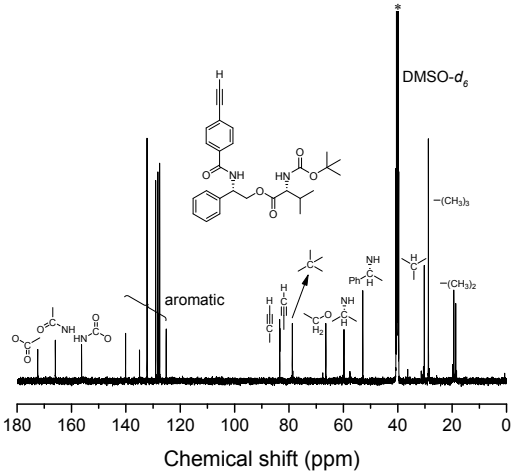

Fig. S8 ^{13}C NMR spectra of **PA-2b** in DMSO-d_6 at 20 °C.

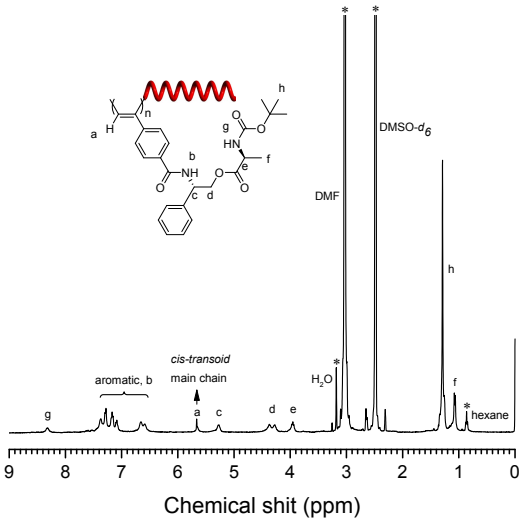

Fig. S9 ^{1}H NMR spectra of **PPA-1a** in DMSO-d_6 at 80 °C.

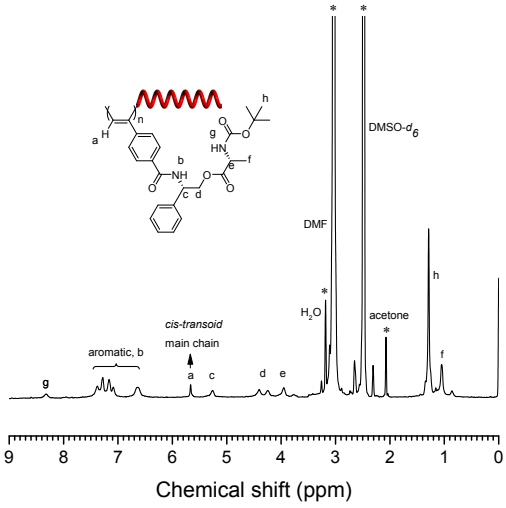

Fig. S10 ^{1}H NMR spectra of **PPA-1b** in DMSO-d_6 at 80 °C.

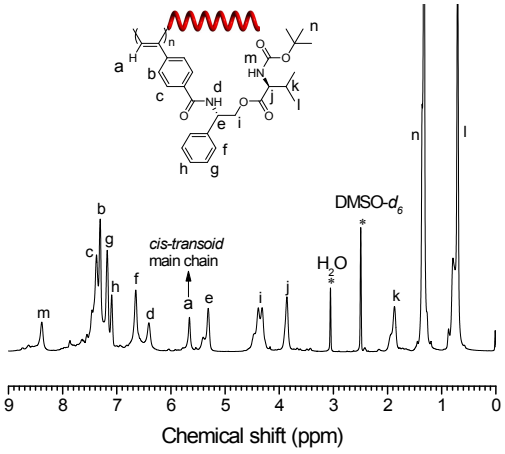

Fig. S11 ^{1}H NMR spectra of **PPA-2a** in DMSO-d_6 at 80 °C.

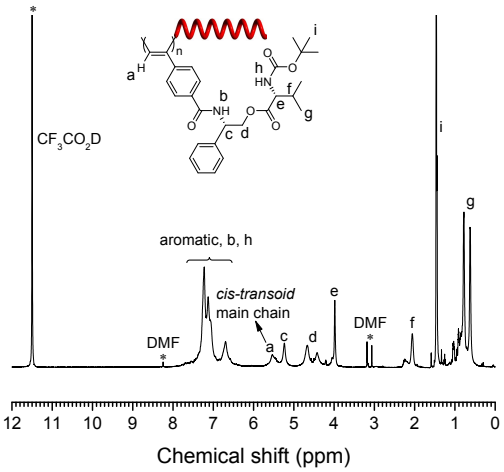

Fig. S12 ^{1}H NMR spectra of **PPA-2b** in CF_3CO_2D at 20 °C.

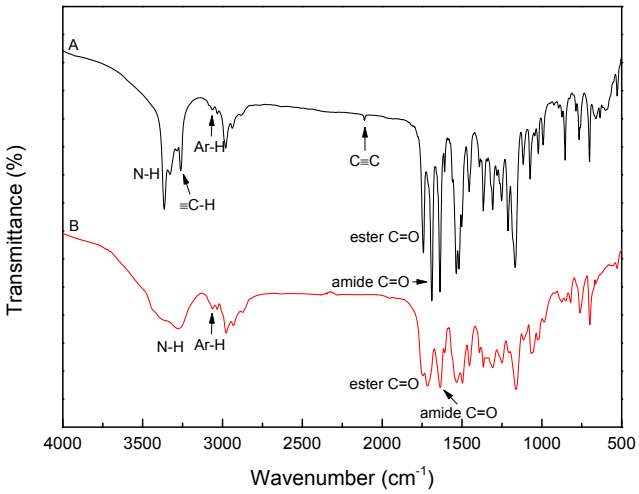

Fig. S13 IR spectra of (A) monomer **PA-1a** and (B) its polymer **PPA-1a**.

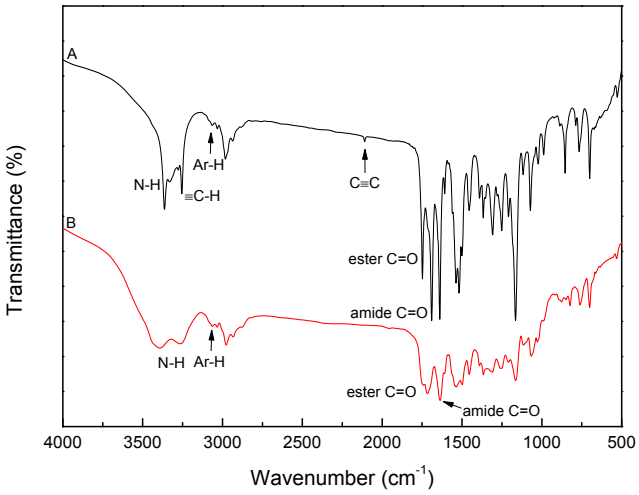

Fig. S14 IR spectra of (A) monomer **PA-1b** and (B) its polymer **PPA-1b**.

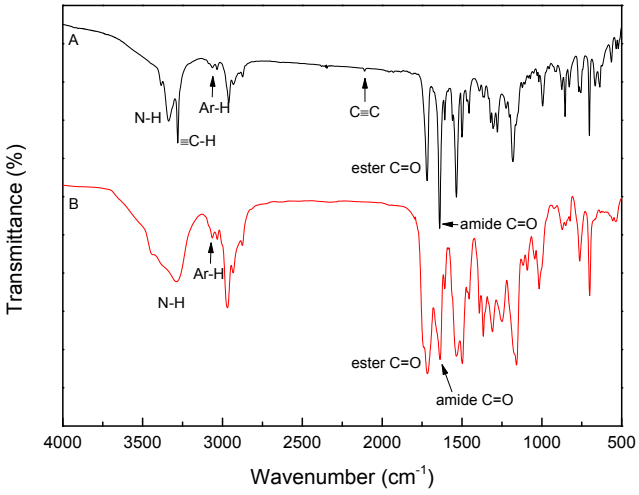

Fig. S15 IR spectra of (A) monomer **PA-2a** and (B) its polymer **PPA-2a**.

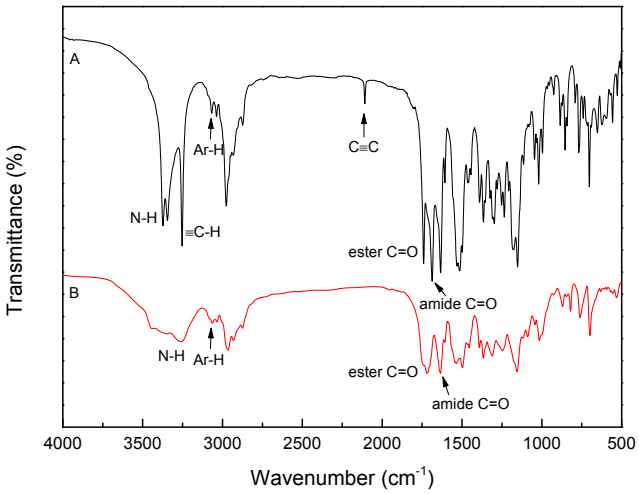

Fig. S16 IR spectra of (A) monomer **PA-2b** and (B) its polymer **PPA-2b**.

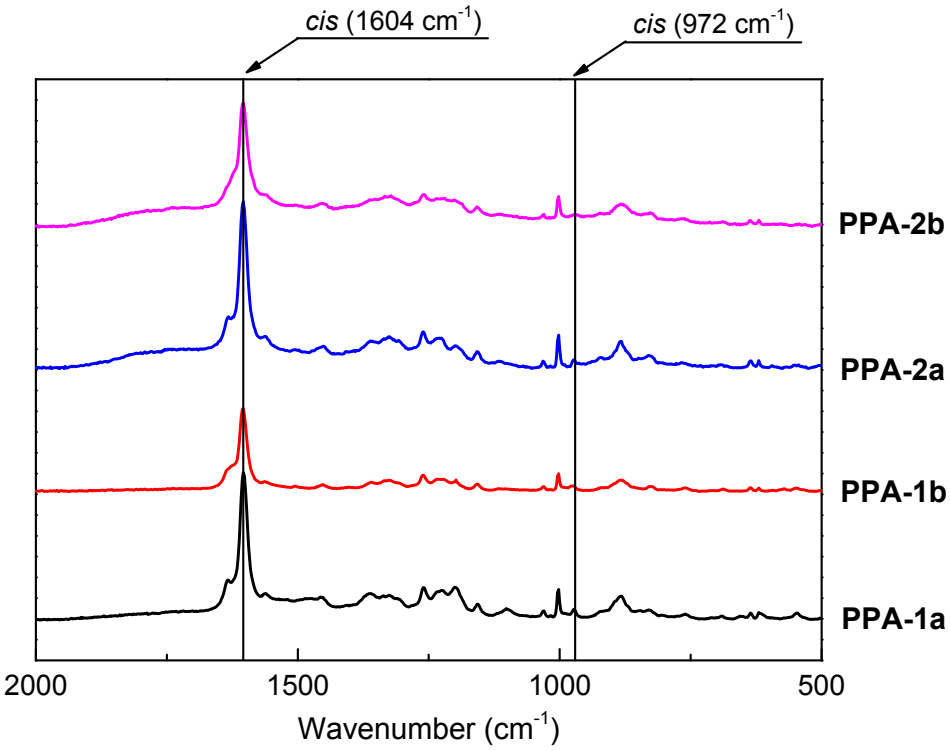

Fig. S17 Laser Raman spectra of poly(phenylacetylene)s in the solid state at 20 °C.

Table S1. Influence of coating solvents on resolution of racemates on the poly(phenylacetylene)s. [a]

Racemates	PPA-1a						PPA-1b				PPA-2a						PPA-2b			
	$CHCl_3$ [b]		DMF [b]		DMSO [b]		THF [b]		DMF [b]		$CHCl_3$ [b]		DMF [b]		DMSO [b]		$CHCl_3$ [b]		DMF [b]	
	k_1'	α	k_1'	α	k_1'	α	k_1'	α	k_1'	α	k_1'	α	k_1'	α	k_1'	α	k_1'	α	k_1'	α
1	0.25(+)	1.36	0.32(+)	1.42	0.29(+)	~1	0.25(-)	~1	0.16(+)	1.46	0.40(+)	1.24	0.31(+)	1.39	0.33(+)	1.38	0.36(+)	~1	0.38(+)	1.42
2	0.20	1.00	0.27(+)	~1	0.24(-)	~1	0.21	1.00	0.11	1.00	0.44(+)	~1	0.36(+)	~1	0.37(+)	~1	0.34(+)	~1	0.27(+)	~1
3	1.64	1.00	1.89	1.00	1.79	1.00	1.23(-)	1.16	1.38	1.00	1.56	1.00	1.62(+)	~1	1.62(+)	~1	1.48	1.00	1.23	1.00
4	1.59	1.00	2.48	1.00	2.77	1.00	2.15	1.00	2.11(-)	1.08	2.25	1.00	2.07(-)	1.14	2.15(-)	1.24	2.17	1.00	2.13(-)	1.34
5	0.38(-)	1.27	0.55(-)	1.13	0.48(+)	~1	0.65(-)	~1	0.44(-)	1.40	0.36	1.00	0.34	1.00	0.35	1.00	0.31	1.00	0.42(-)	~1
6	7.13(+)	1.09	9.98(+)	1.11	7.44(+)	~1	6.30	1.00	8.03(-)	1.07	8.84(+)	~1	7.11(+)	~1	6.35(+)	1.18	10.30(-)	~1	11.16(-)	~1
7	1.70	1.00	2.21(-)	1.08	2.33(-)	1.09	1.80(-)	1.18	1.66	1.00	2.02(-)	1.31	1.94(-)	1.25	1.99(-)	1.18	1.59	1.00	1.66	1.00
8	0.55	1.00	0.60	1.00	0.60	1.00	1.49	1.00	1.91(-)	1.19	1.33	1.00	1.33	1.00	1.40	1.00	1.67	1.00	1.88(-)	1.43
9	6.41	1.00	8.01	1.00	8.75(-)	1.14	6.44	1.00	6.78	1.00	1.84(-)	1.76	8.45	1.00	1.92(-)	1.35	4.63(-)	1.33	5.05(-)	1.35
10	0.25	1.00	0.70(-)	1.13	0.60(-)	1.23	0.24	1.00	0.15	1.00	0.25	1.00	0.50	1.00	0.27	1.00	0.24	1.00	0.24	1.00
11	3.18	1.00	3.89(-)	1.10	2.68	1.00	2.71	1.00	3.38	1.00	2.55	1.00	2.61	1.10	2.74	1.00	2.51	1.00	1.09	1.00

[a] Column: 25 cm × 0.20 cm id. [b] Coating solvents. Eluent: hexane/2-propanol (95/5, v/v). Flow rate: 0.1 mL/min. The signs in parentheses represent the optical rotation of the first-eluted enantiomer.