Supporting Information

Amino Acid Substituted Polyacetylene Based Chiral Core-Shell Microspheres: Helical Structure Induction and Application for Chiral Resolution and Adsorption

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About enantioselective crystallization: The prepared chiral composite microspheres are put into a simple separation column, which contains a hollow small test tube. There is a filter film at the bottom of the small test tube, and the bottom was sealed with a plastic film. Remove the preservative film and centrifuge after crystallization was completed. The crystals and microspheres remained in the small test tube, and the supernatant flows into the outer test tube. Chiral adsorption: put the prepared chiral microspheres into the filter paper, and then the steps are the same as above.

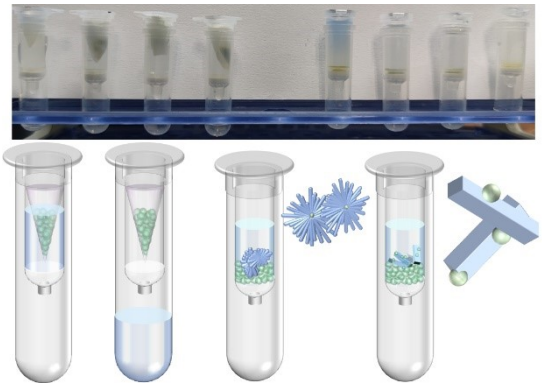

Fig. S1. Enantioselective crystallization and adsorption

A series of parallel experiments with different monomer concentrations of DVB-55 were carried out to obtain microspheres with uniform particle size and good morphology, as follows, anhydrous acetonitrile (29.4 mL, 29.2 mL, 28.9 mL, 28.8 mL, 28.6 mL), DVB-55 (0.6 mL, 0.8 mL, 1.1 mL, 1.2 mL, 1.4 mL; 2.0 vol.%, 2.7 vol.%, 3.6 vol.%, 4.0 vol.%, 4.6 vol.% relative to total volume), AIBN (12 mg, 16 mg, 22 mg, 24 mg, 28 mg, 2.0 wt.% relative to DVB55).

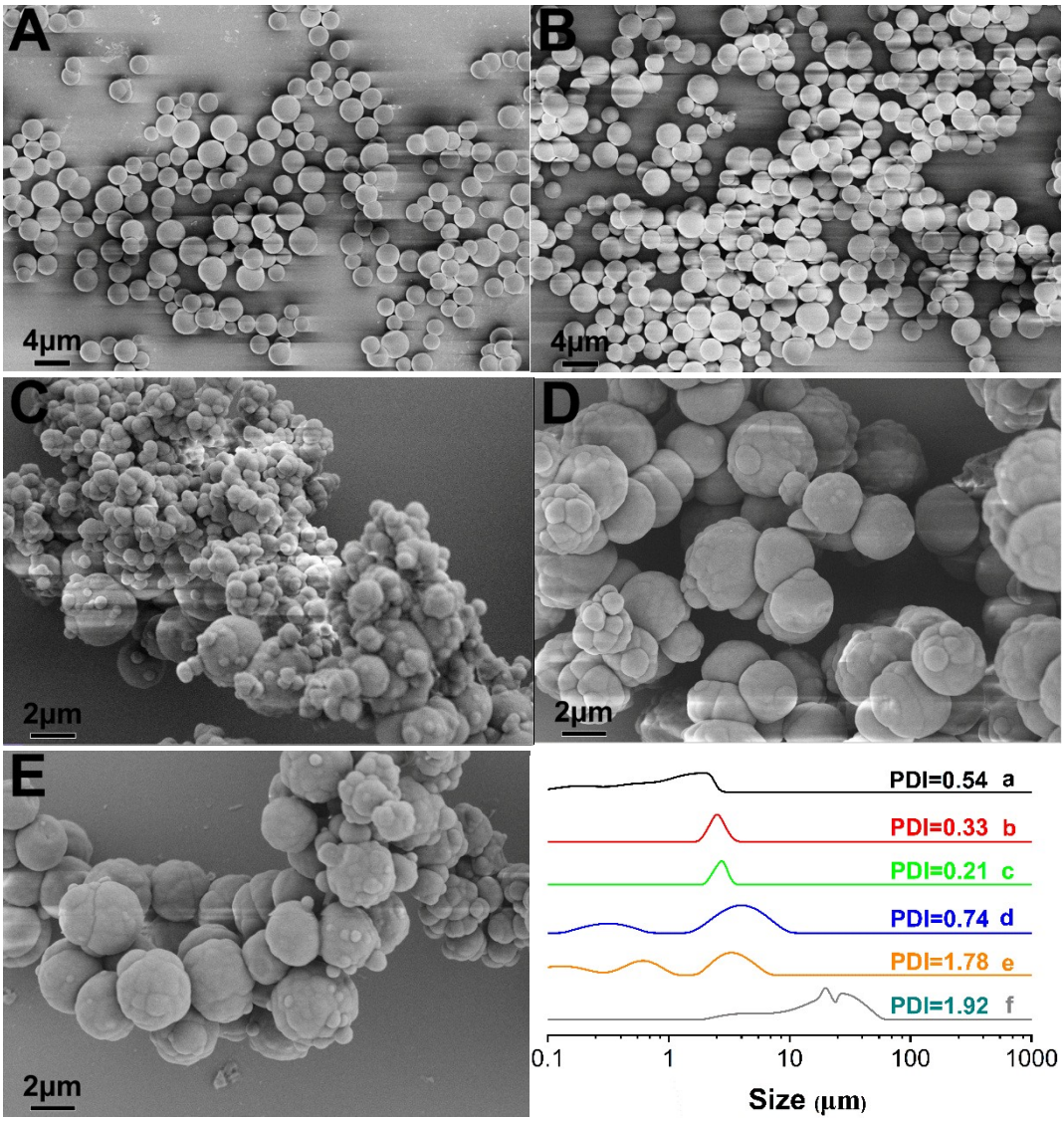

Fig. S2. The SEM and particle size distributions for PDVB microspheres with different volume fractions of DVB-55; 2 vol.% (A); 2.7 vol.% (B); 3.6 vol.% (C); 4.0 vol.% (D); 4.6 vol.% (E) and 2 vol.% (a); 2.7 vol.% (b); 3.3 vol.% (c); 3.6 vol.% (d); 4 vol.% (e); 4.6 vol.% (f)

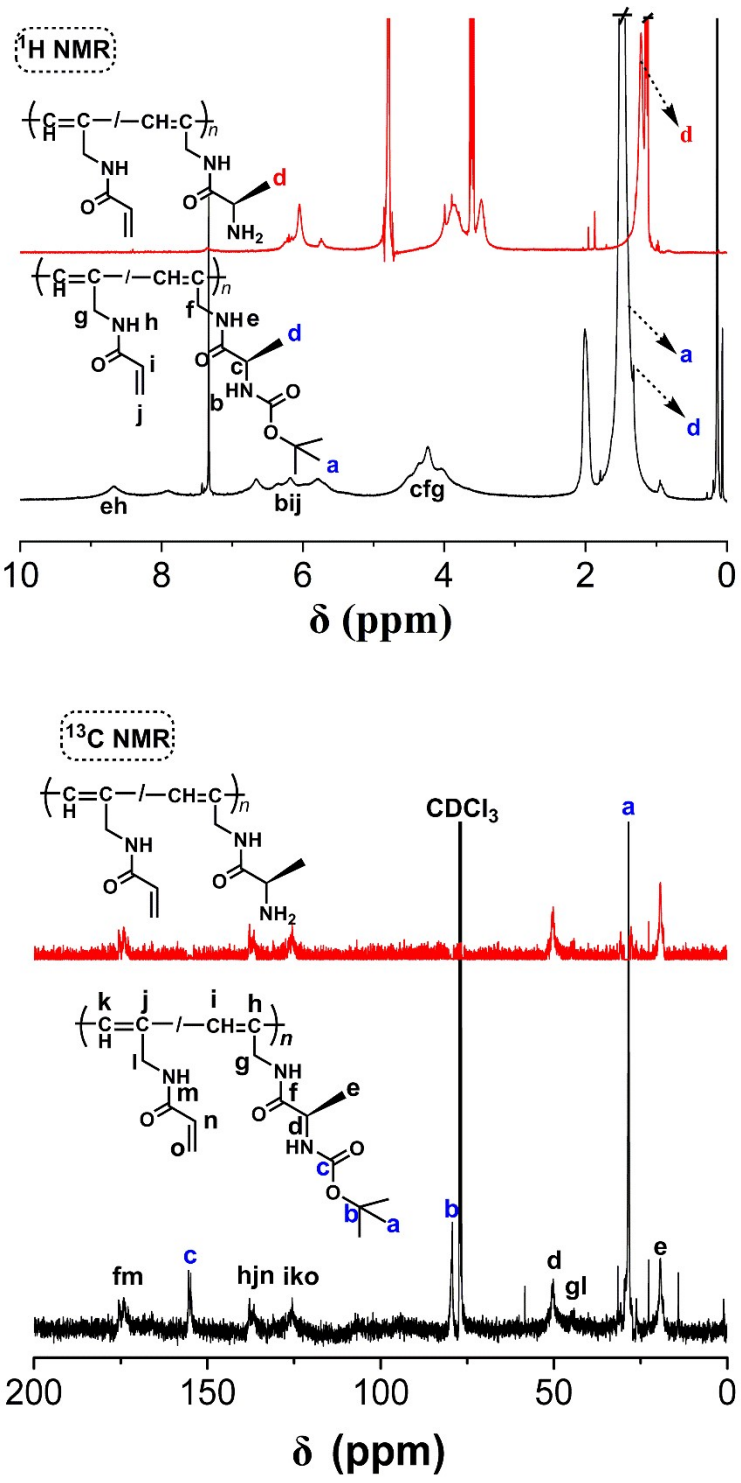

Fig. S3. A comparison between the NMR spectra of P-M1-*co*-M2-Boc and P-M1-*co*-M2-NH_2

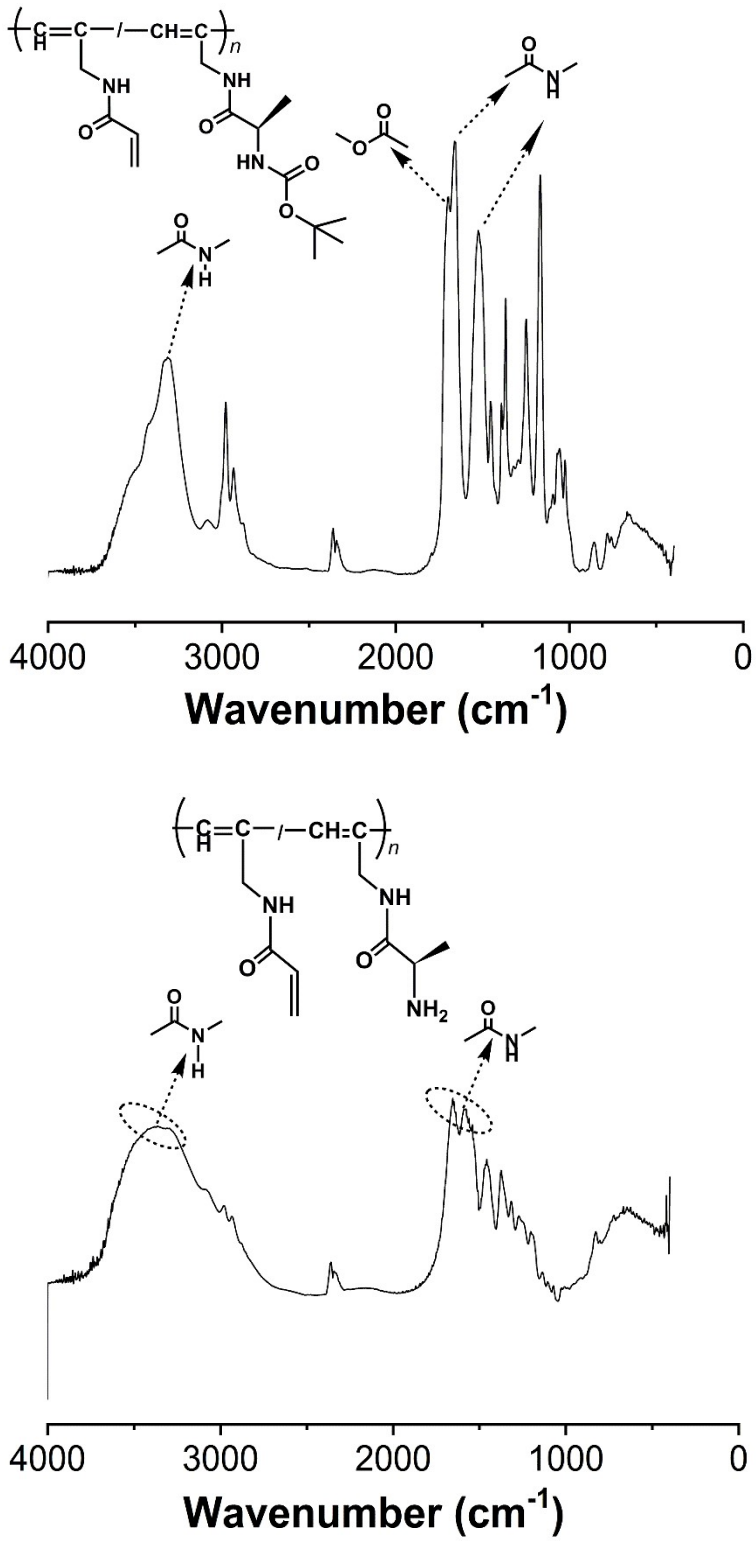

Fig. S4. A comparison between the FT-IR spectra of P-M1-*co*-M2-Boc and P-M1-*co*-M2-NH_2

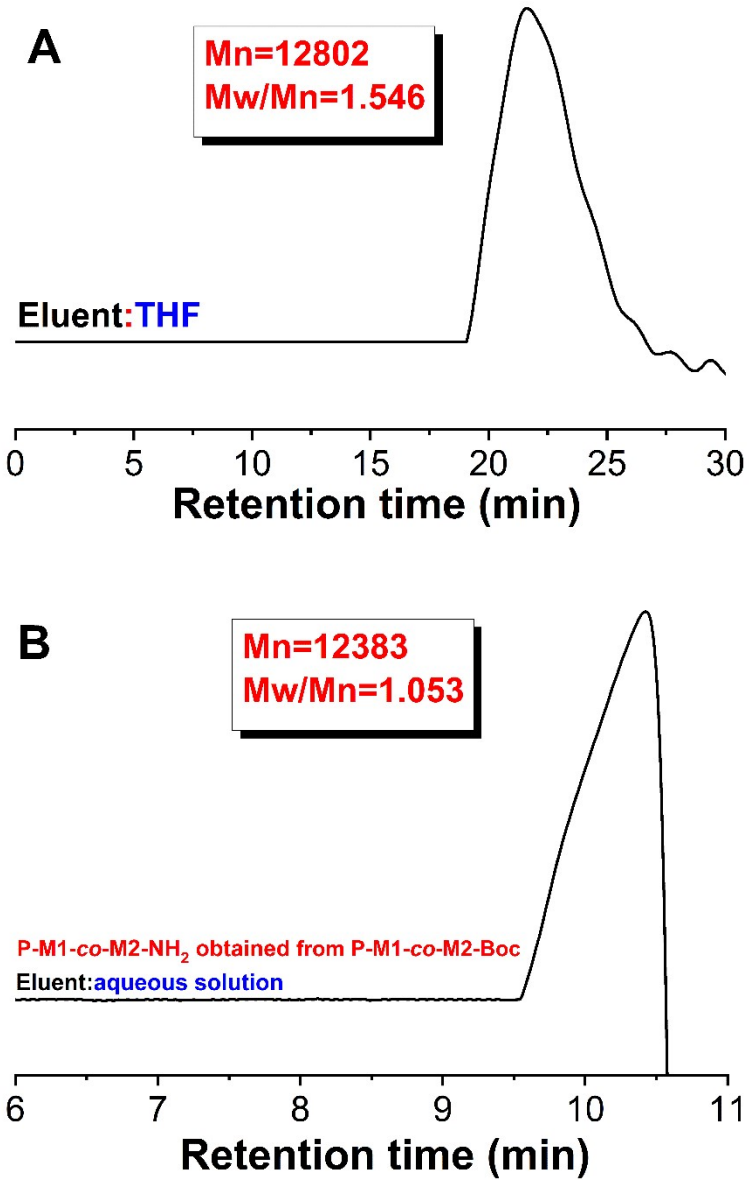

Fig. S5. The GPC curves of P-M1-*co*-M2-Boc (A) and P-M1-*co*-M2-NH_2 obtained from P-M1-*co*-M2-Boc (B)

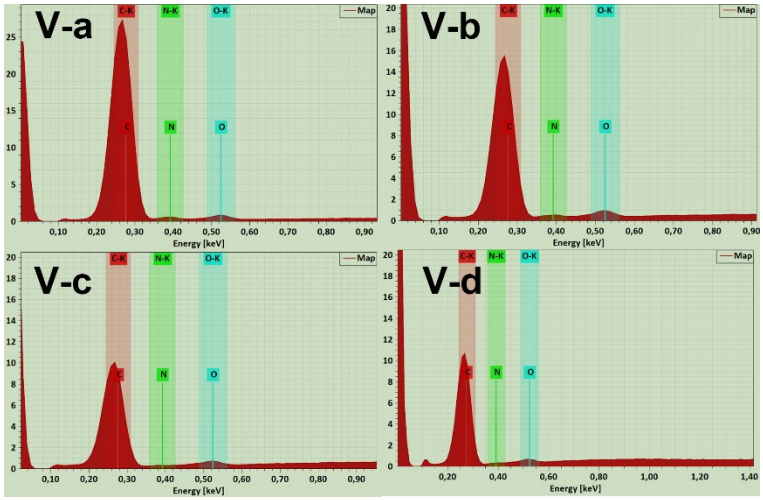

Figure S6. The SEM-EDS of V-(a-d)

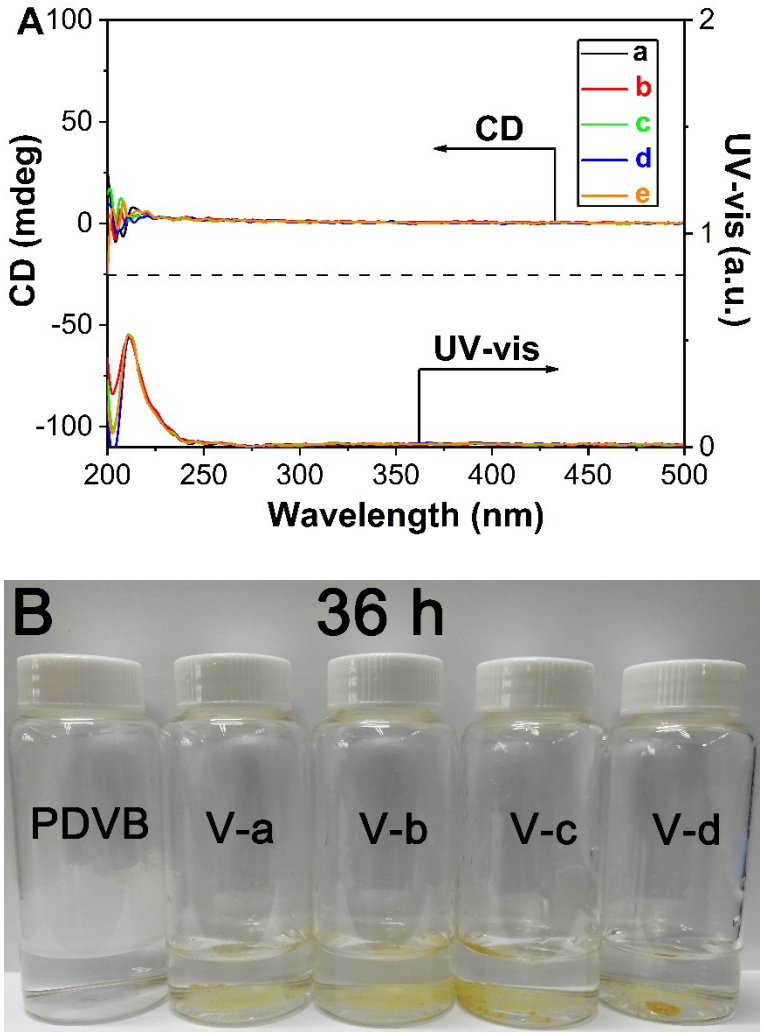

Fig. S7. A, CD and UV-vis spectroscopy of the residual solution of enantioselective crystallization: PDVB (a); V-a (b); V-b (c); V-c (d); V-d (e)

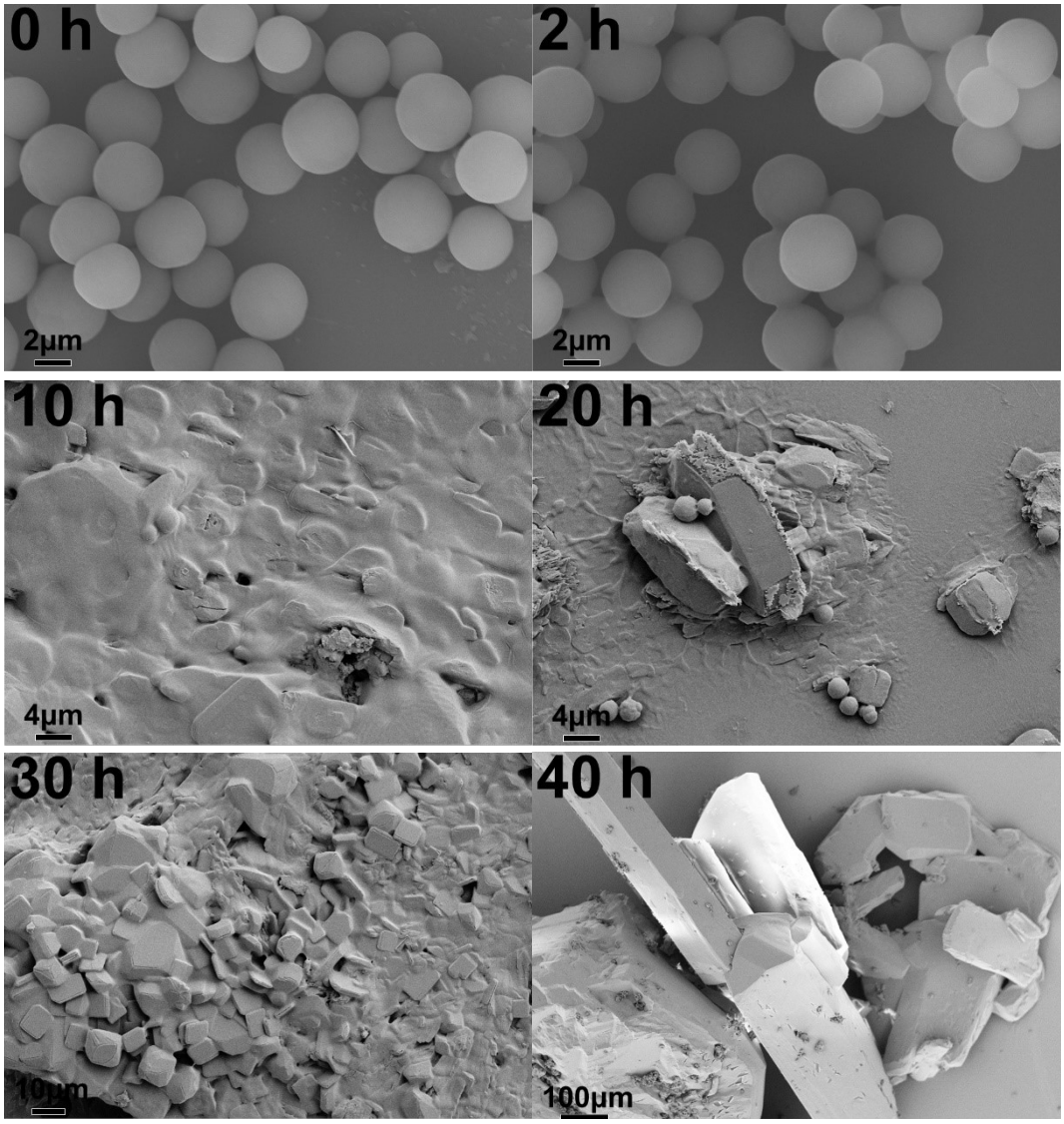

Fig. S8. SEM images of Boc-L-alanine crystals growing induced by (L)-chiral core-shell microspheres.

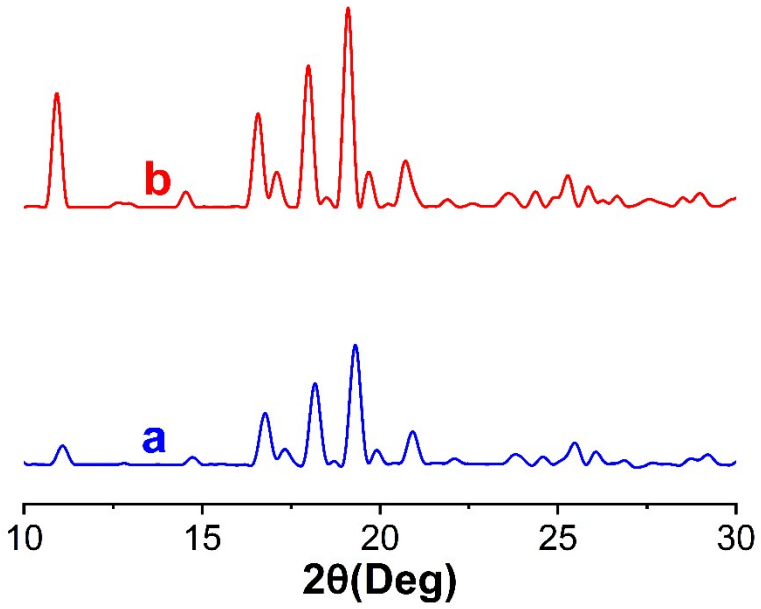

Fig. S9. X-ray diffraction patterns of (a) pure Boc-L-alanine crystals and (b) Boc-L-alanine crystals were induced by (L)-chiral composite microspheres

Table S1. The optical rotation of amino acid in excess in the residual solution

Run	Optical rotation							
Pure amino acid	Boc-D-Ala (15 mg/ml)			Boc-D-Asn (5 mg/ml)		Met (5 mg/ml)		Pro (5 mg/ml)
	0.3692			-0.0671		0.0394		0.4745
Time (h)	5	10	15	20	30	40	50	60
the Boc-Ala in excess in the residual solution (**L-V-a**)	0.0332	0.0478	0.0627	0.0812	0.1255	0.2215	0.3138	0.3507
the Boc-Ala in excess in the residual solution (**L-V-b**)	0.0443	0.0664	0.1107	0.1476	0.2621	0.328	0.3510	0.3510
the Boc-Ala in excess in the residual solution (**L-V-c**)	0.0485	0.0728	0.0956	0.1661	0.2879	0.3322	0.3508	0.3508
the Boc-Asn in excess in the residual solution (**L-V-c**)	-0.0060	-0.0080	-0.0150	-0.0190	-0.0312	-0.0435	-0.0577	-0.0600
the Met in excess in the residual solution (**L-V-c**)	0.0035	0.0055	0.0078	0.0102	0.0157	0.0216	0.0263	0.0307

the Pro in excess in the residual solution (**L-V-c**)	0.0379	0.0616	0.0901	0.1328	0.1945	0.3084	0.3368	0.3796