Supporting Information

Chiral helical substituted polyacetylene grafted on hollow polymer particles: Preparation and enantioselective adsorption towards cinchona alkaloid

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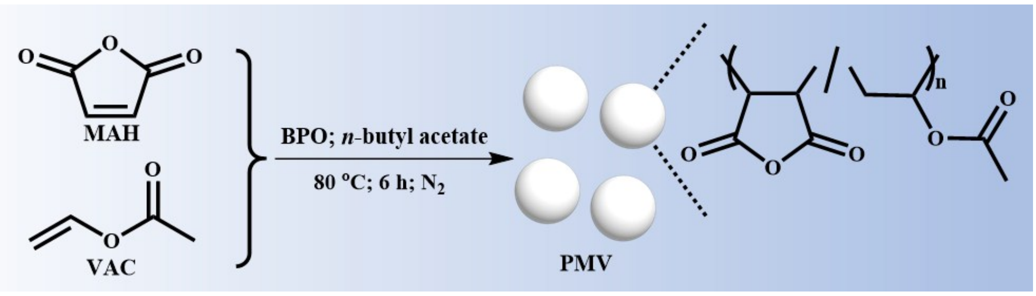
Synthesis of PMV template. The strategy for preparing PMV template was presented in **Scheme S1**. Typically, monomer MAH (7.35 g, 75 mmol) was dissolved by *n*-butyl acetate (42 mL) in a 100 mL three-neck flask. Then comonomer vinyl acetate (6.45 g, 75 mmol) and initiator BPO (0.048 g, 0.2 mmol) were added to the reaction system. Polymerization proceeded for 6 h at 80 °C under nitrogen atmosphere. After 6 h, the prepared PMV template was collected by centrifugation, washed with ethanol three times and dried in a vacuum overnight.



Scheme S1. Schematic Strategy for preparing PMV template.

Preparation of hollow polymer particles (HPPs). As shown in **Scheme 1**, to prepare HPPs, the core/shell particles were firstly synthesized through precipitation copolymerization of ANE, MAH and DVB, using PMV particles as template. In a typical experiment, monomer MAH (1.18 g, 12 mmol) and initiator AIBN (0.03 g, 0.18 mmol) were dissolved in *n*-butyl acetate (28 mL) and transferred into a 100 mL three-necked flask. Then PMV template (1.5 g) was dispersed in the system with a mechanical stirrer (stirring speed, 250 rpm). Then comonomer ANE (1.78 g, 12 mmol) and cross-linker DVB (0.78g, 6 mmol) with *n*-heptane (12 mL) were added in the flask. Afterwards, the flask containing the mixture was placed in a water bath at 75 °C and retained at the temperature for 6 h under nitrogen atmosphere. After polymerization, the resulting core/shell particles were collected by centrifugation, thoroughly washed with ethanol and then dried in vacuum. To prepare HPPs, the core/shell particles were taken from the vacuum oven and added in a beaker with 20 mL of acetone. Then, the beaker was ultrasonicated for 30 min to remove the template and centrifuged to isolate the particles. The remaining products were washed with ethanol three times, and the hollow polymer particles (HPPs) were obtained.

Table S1. The elemental analysis data for HPPs, M-HPPs and HPPs/Poly1R.

Sample#	N [%]	C [%]	H [%]
HPPs	0.11	63.52	6.37
M-HPPs	3.39	64.82	7.32
HPPs/Poly1R	4.08	66.31	7.20

The density of alkynyl groups in M-HPPs can be determined based on the N content.

density of alkynyl groups (mol/g) = $(N\%/M_N)$ = 0.0023 mol/g = 2.3 mmol/g.

The content of poly1 in HPP**s**/Poly1 can be determined based on the N content.

Content of poly1 (wt%) = $(N_{HPPs/Poly1R}\% - N_{M\text{-}HPPs}\%)/(N_{M1}\% - N_{M\text{-}HPPs}\%)$ = 18.7 wt%

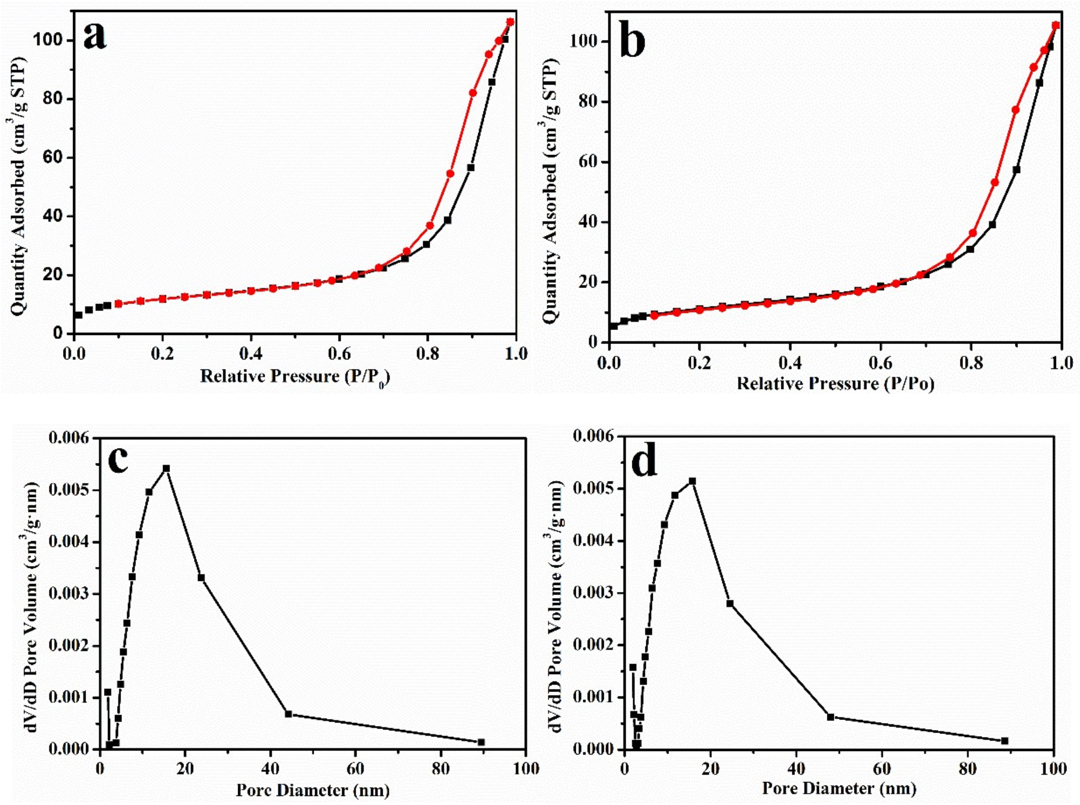


Figure S1. N_2 isotherms of (a) M-HPPs and (b) HPPs/Poly1R at 77 K; the pore size distribution of the mesopores of (c) M-HPPs and (d) HPPs/Poly1R.

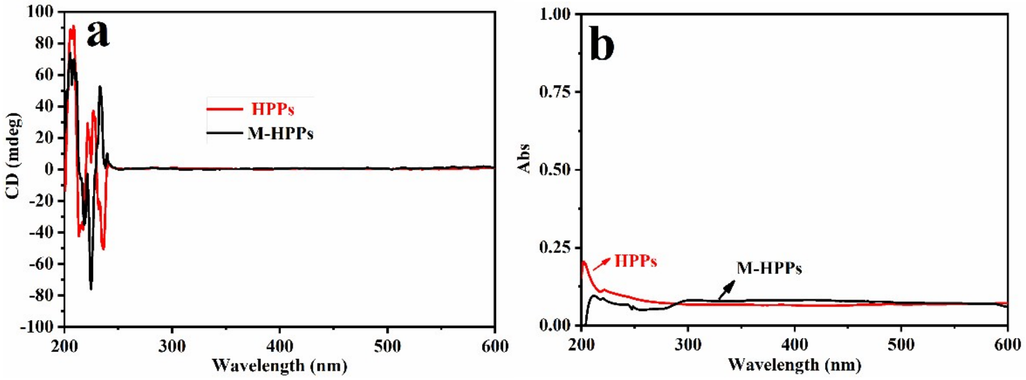


Figure S2. (a) CD and (b) UV-vis adsorption spectra of HPPs and M-HPPs. The particles (0.1 mg/mL) were dispersed in $CHCl_3$ by sonication for the measurement.

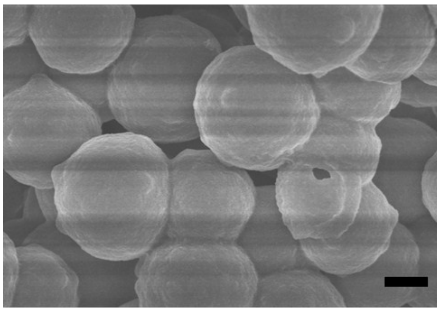


Figure S3. SEM image of HPPs/Poly1R after three adsorption-desorption cycles. Scale bar: 500 nm.