

Supporting Information

Imprinting supramolecular chirality on silica from natural triterpenoid-regulated helical ribbons

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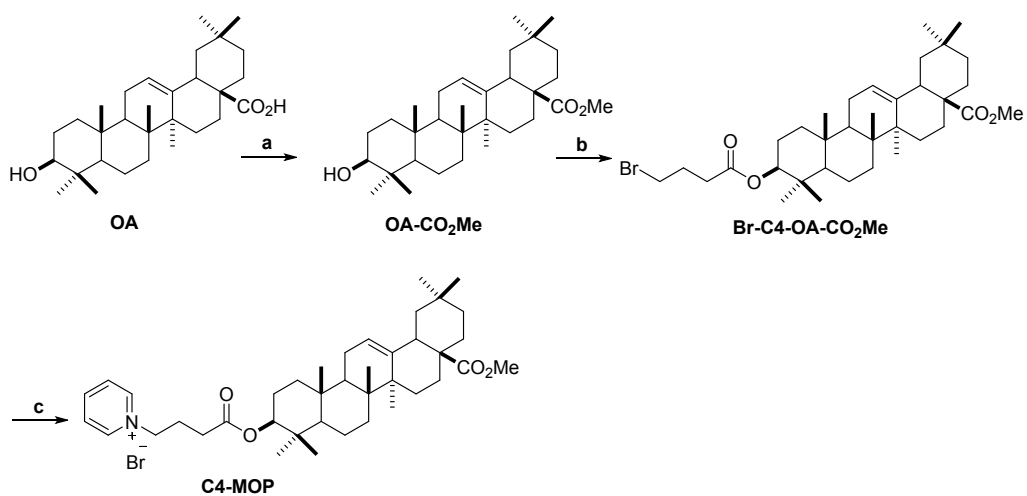
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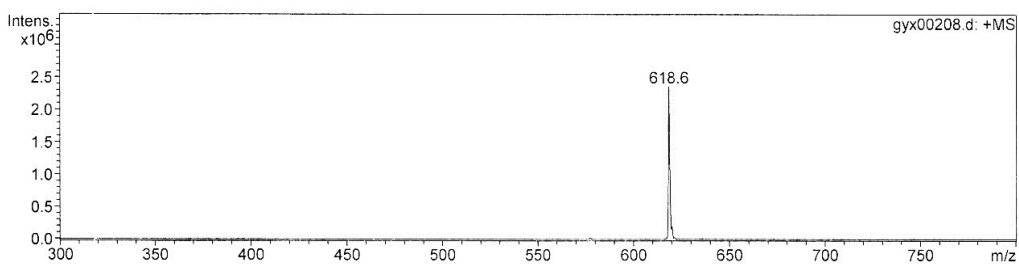
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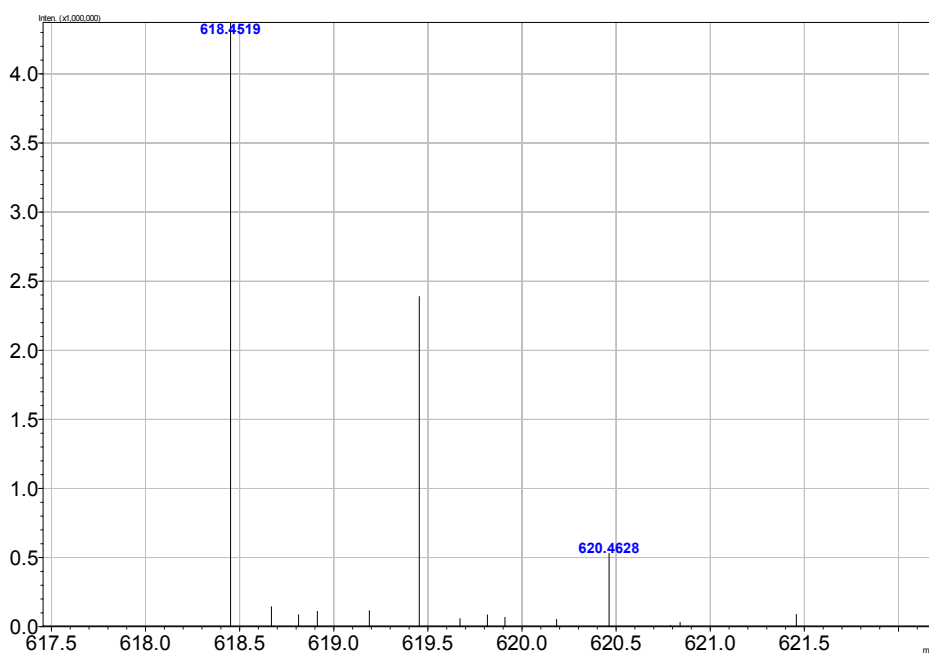
1. Synthesis of C4-MOP



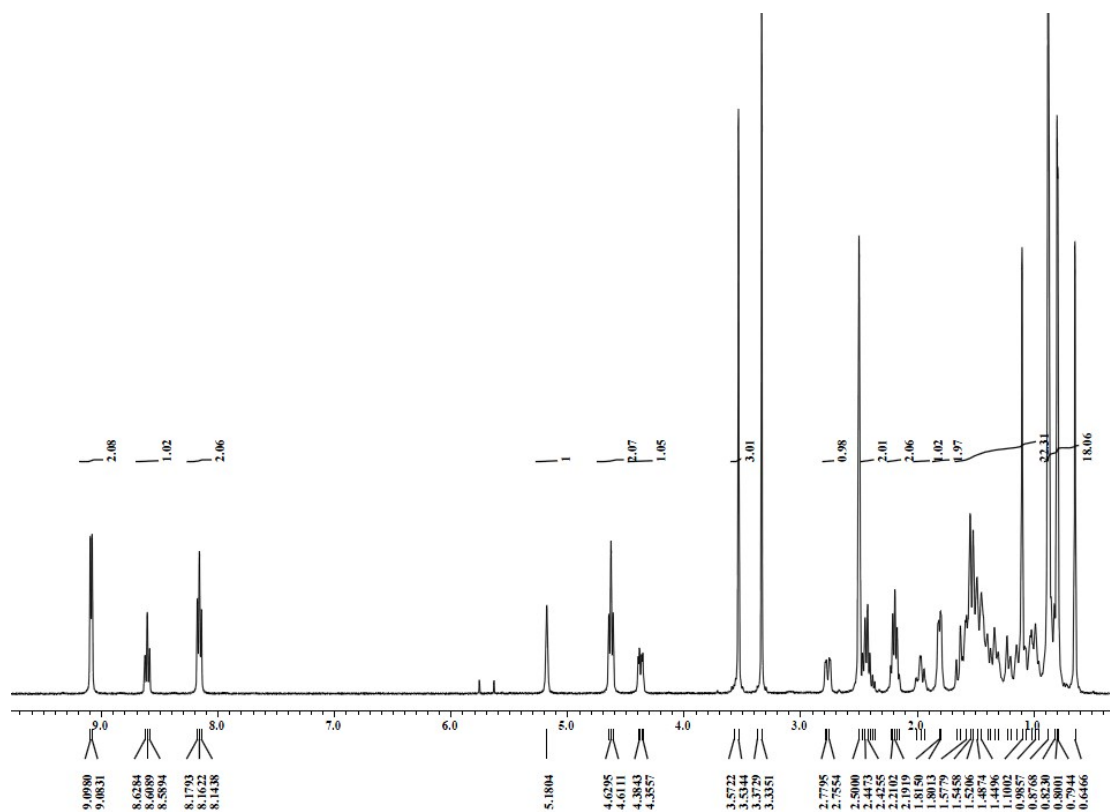
Scheme S1. (a) CH₃I, DMF, r.t., 20 h, 97 %; (b) 4-bromobutyric acid, DCC, DMAP, dry DCM, r.t., 20 h, 58 %; (c) pyridine, r.t., 12 h, 60 %.



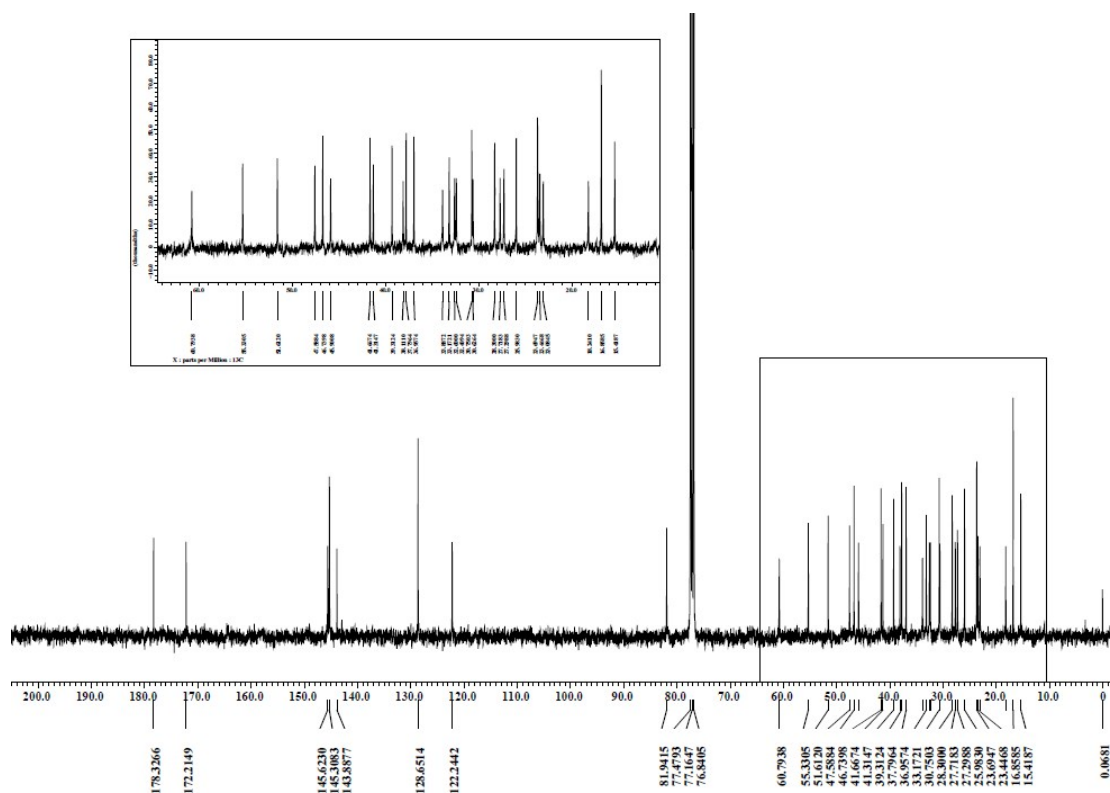
ESI-MS (+) spectrum of C4-MOP



HRMS (ESI) spectrum of C4-MOP











¹H NMR spectrum of **C4-MOP** (400 MHz, DMSO-*d*₆)



¹³C NMR spectrum of **C4-MOP** (100 MHz, CDCl₃)

2. Assembly behaviors of C4-MOP

Table S1 Assembly behaviors of **C4-MOP** in the mixed solvents of methanol/water

Entry	Concentration (mg/mL)	Volume ratio (CH ₃ OH/H ₂ O, v/v)	State	Photo
1	5.0	1:0	S	
2	5.0	2:1	S	
3	5.0	1:1	G	
4	5.0	1:2	G	
5	0.5	1:2	S	
6	0.5	1:3	PG	
7	0.5	1:4	PG	
8	0.5	0:1	SP	

S: solution, G: gel, PG: partial gel, SP: suspension

3. TEM images of C4-MOP assemblies under low concentration

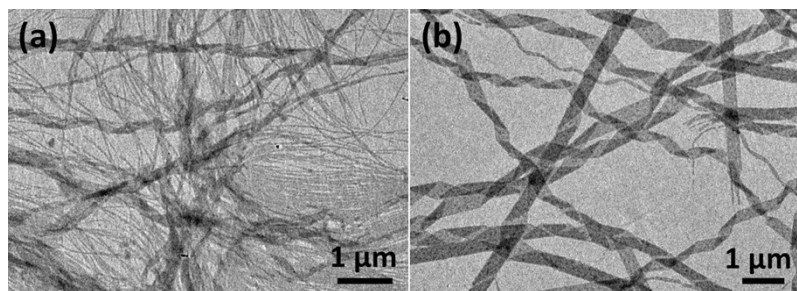


Fig. S1 TEM images of **C4-MOP** assemblies (0.5 mg/mL) in the mixed solvents of methanol and water with different volume ratios: (a) 1:2 and (b) 1:3.

4. CD spectra of C4-MOP assemblies under low concentration

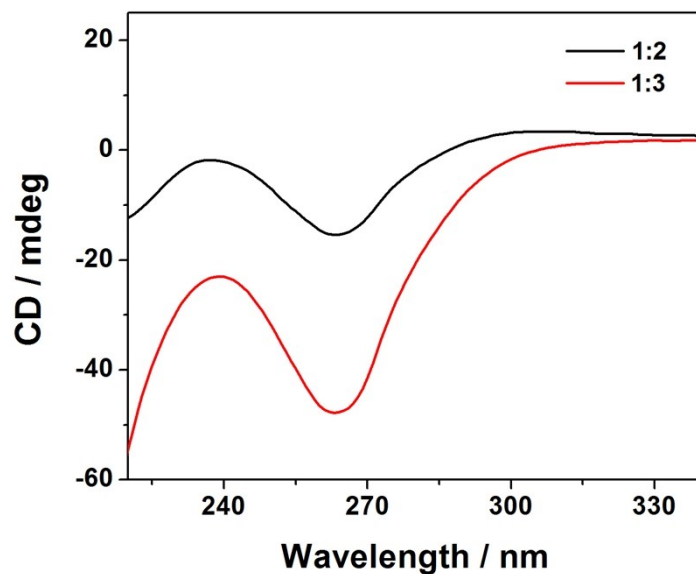


Fig. S2 CD spectra of **C4-MOP** assemblies (0.5 mg/mL) in the mixed solvents of methanol and water with different volume ratios.

5. UV-Vis spectra of C4-MOP assemblies

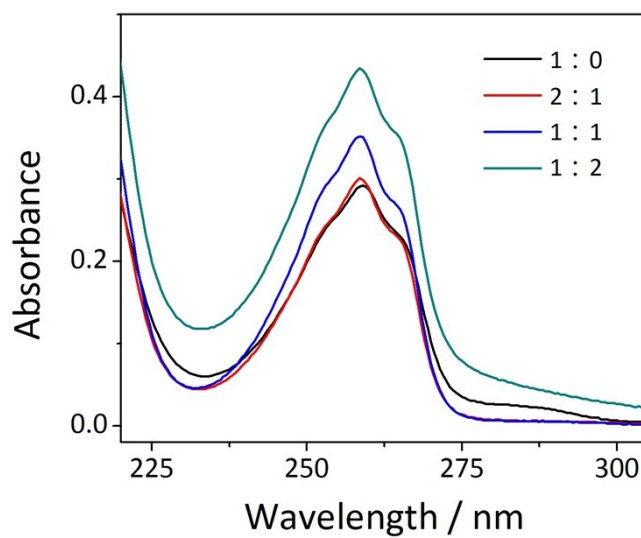


Fig. S3 UV-Vis spectra of **C4-MOP** assemblies in the mixed solvents of methanol and water with different volume ratios.

6. Theoretical optimized structure of C4-MOP

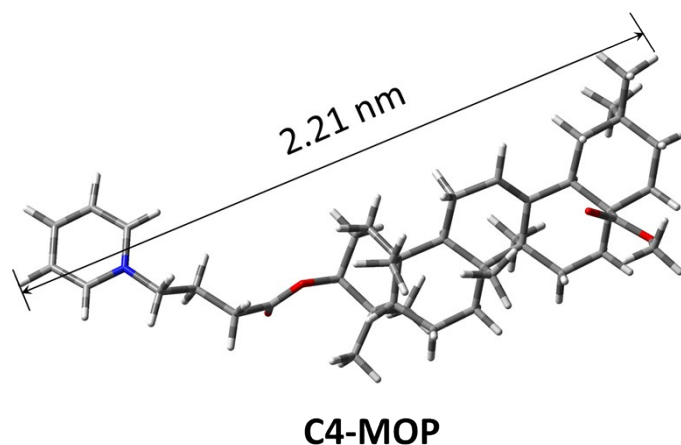


Fig. S4 Theoretical optimized structure of **C4-MOP** using ChemBio 3D Ultra software. Carbon atoms, hydrogen atoms, oxygen atoms, and nitrogen atoms are presented in dark gray, light gray, red and blue, respectively. The bromine is neglected.

7. Photos of gels before and after imprinting

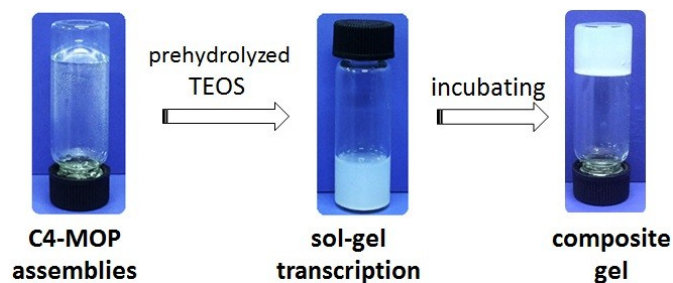


Fig. S5 Preparation of organic-inorganic hybrid silica using pre-assembly method.

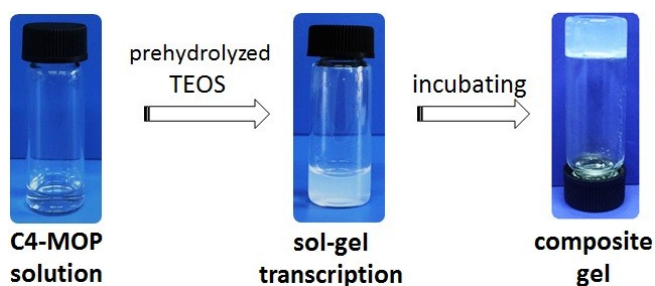


Fig. S6 Preparation of organic-inorganic hybrid silica using co-assembly method.

8. TEM image of hybrid helical ribbons prepared by co-assembly method

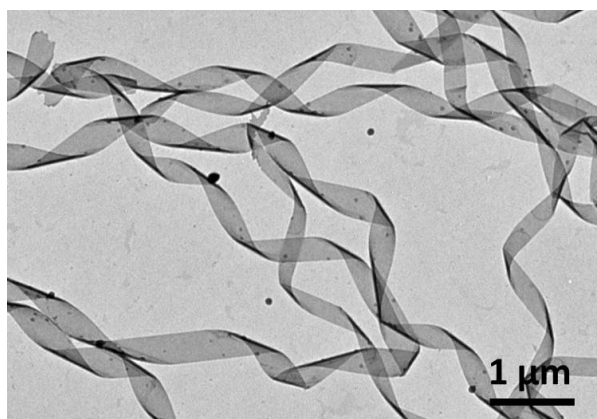


Fig. S7 TEM image of organic-inorganic hybrid helical ribbons prepared by co-assembly method.

9. TEM images of hybrid helical ribbons under different incubating time

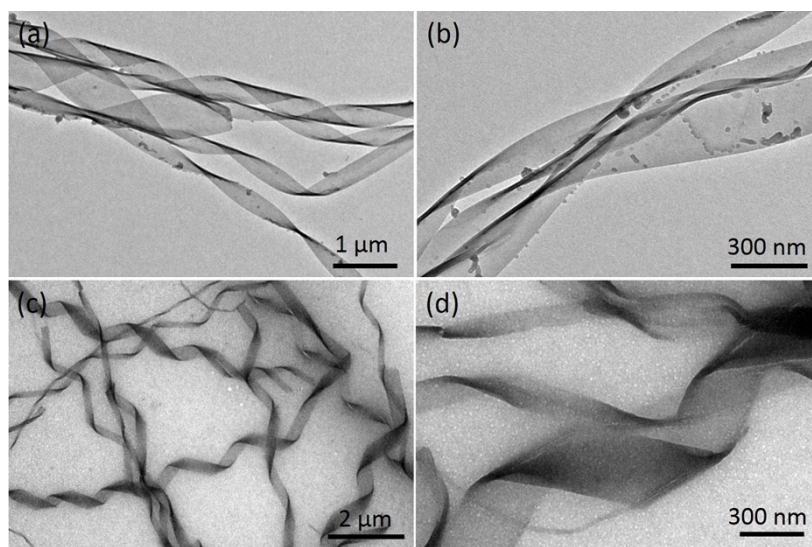


Fig. S8 TEM images of organic-inorganic hybrid helical ribbons under different incubating time: (a)(b) 1 week and (c)(d) 2 weeks.

10. Element analysis of hybrid helical ribbons by HRTEM/EDS

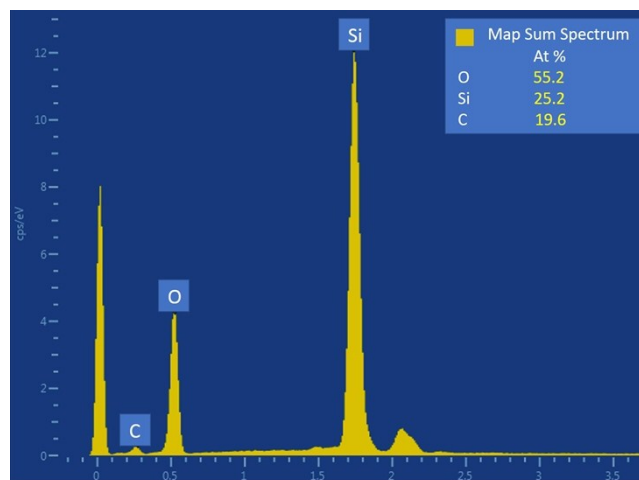


Fig. S9 Element analysis of organic-inorganic hybrid helical ribbons by HRTEM/EDS.

11. Pore-size distribution curve of helical silica

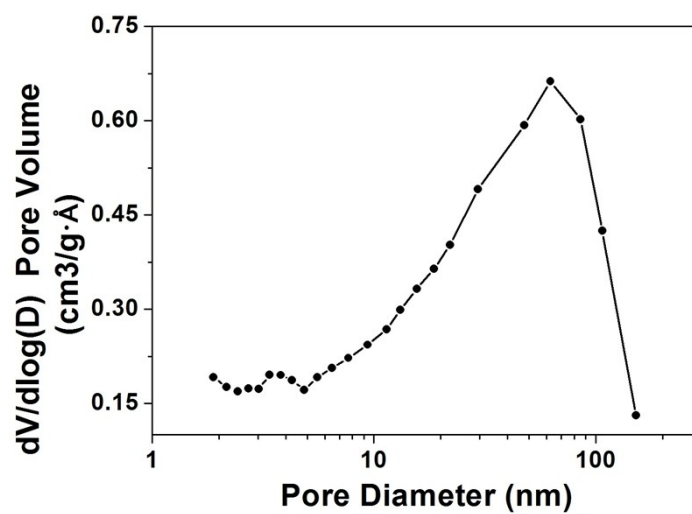


Fig. S10 Pore-size distribution curve of the template-removed helical silica calculated by the BJH model.