Supporting Information

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

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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
$^1$H NMR spectrum of C4-MOP (400 MHz, DMSO-$d_6$)

$^{13}$C NMR spectrum of C4-MOP (100 MHz, CDCl$_3$)
2. Assembly behaviors of C4-MOP

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

<table>
<thead>
<tr>
<th>Entry</th>
<th>Concentration (mg/mL)</th>
<th>Volume ratio (CH₃OH/H₂O, v/v)</th>
<th>State</th>
<th>Photo</th>
</tr>
</thead>
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</tr>
<tr>
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<td>G</td>
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<td><img src="image4.png" alt="Image" /></td>
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<td>S</td>
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<td>1:3</td>
<td>PG</td>
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<td>0.5</td>
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<td>PG</td>
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<td>0.5</td>
<td>0:1</td>
<td>SP</td>
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</tr>
</tbody>
</table>

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

![Element analysis diagram](image1)

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

11. Pore-size distribution curve of helical silica

![Pore-size distribution curve](image2)

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