Supporting Information

Title
CD-MOFs Crystal Transformation from Dense to Highly Porous Form for Efficient Drug Loading

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S1. Three production strategies of γ-CD-MOFs

Figure S1. Different strategies were adopted to produce γ-CD-MOFs having BCC array of (γ-CD)$_6$ units: (1) the strategy of Stoddart et al.; (2) the strategy optimized by our previous study to shorten reaction time and avoid long-term operation; (3) the new strategy was put forward by this study to refuse methanol in crystal growth step.

S2. Different solubilities of relevant substances in different reagents

Table S1. Solubilities of relevant substances in common liquid organic reagents

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<tr>
<th></th>
<th>MeOH</th>
<th>EtOH</th>
<th>Acetone</th>
<th>Ethyl acetate</th>
<th>Hexane</th>
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<tr>
<td>KOH-γ-CD-MOF</td>
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<tr>
<td></td>
<td>Soluble</td>
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<tr>
<td>Acetic acid</td>
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<td>slightly</td>
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<tr>
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<td>soluble</td>
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<tr>
<td>γ-CD</td>
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<td>insoluble</td>
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</tr>
</tbody>
</table>

Polarity: Water (10.2) > MeOH (6.6) > EtOH (4.3) > Acetone (5.4) > Ethyl acetate (4.3) > Hexane (0.06), Acetic acid (6.2).

S3. The shapes of after-washing KAc-γ-CD-MOFs
**Figure S2.** SEM images showed the shape of dense KAc-γ-CD-MOFs after washing in different organic solvents: (a), (b) methanol; (c), (d) ethanol; (e), (f) acetone; (g), (h) ethyl acetate; (i), (j) hexane.

**S4. The transformation process from amorphism KAc-γ-CD-MOFs to dense KAc-γ-CD-MOFs**

The transformation process was observed and demonstrated by polarized microscope (Figure S3). Originally, the amorphism KAc-γ-CD-MOFs had no polarized light after freeze drying (Figure S3a). After being transferred into mother solution, it showed polarized image again while its shape was irregular (Figure S3b). After 1 h, many small dense KAc-γ-CD-MOFs particles generated and the amorphism KAc-γ-CD-MOFs decreased in size with their surface became smooth (Figure S3c). After 24 h, all the particles were columnar with high polarization and regular morphology identical to that of dense KAc-γ-CD-MOFs, indicating that the amorphism KAc-γ-CD-MOFs transformed back to dense KAc-γ-CD-MOFs (Figure S3d)
Figure S3. The polar-microscopes of transformation from amorphism KAc-γ-CD-MOFs to dense KAc-γ-CD-MOFs. (a) Amorphism KAc-γ-CD-MOFs (dense KAc-γ-CD-MOFs after drying). (b) Amorphism KAc-γ-CD-MOFs poured into mother solution. (c) Amorphism KAc-γ-CD-MOFs transferred into mother solution for 1 h. (d) Amorphism KAc-γ-CD-MOFs transferred into mother solution for 24 h.

S5. Stability of porous KAc-γ-CD-MOFs

According to Liu’s article\textsuperscript{1}, two groups of porous KAc-γ-CD-MOFs were put in stability test chamber for 48 h at 60 ℃ and 60% RH, one group unsealed and one sealed with allochroic silicagel. From Figure S4, it was found that heating did not change the crystal form, but the crystal form changed obviously with humidification. Thus, it is concluded that porous KAc-γ-CD-MOFs is stable under heating and undergoes changes in humidity.

Figure S4. The PXRD results of different samples
References