Electronic Supplementary Material (ESI) for Chemical Science.


# Supporting Information

## Hyper-crosslinked β-Cyclodextrin Porous Polymer: An Adsorption-Facilitated Molecular Catalyst Support for Transformation of Water-Soluble Aromatic Molecules

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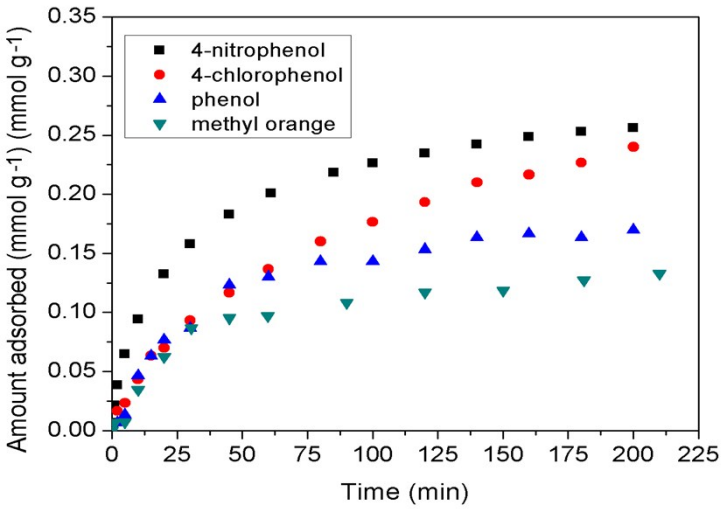


**Figure S1**. Adsorption amount of aromatic molecules for BnCD-HCP as a function of adsorption time. The initial concentration of 4-nitrophenol, 4-chlorophenol, phenol and methyl orange aqueous solution was 0.1mM.

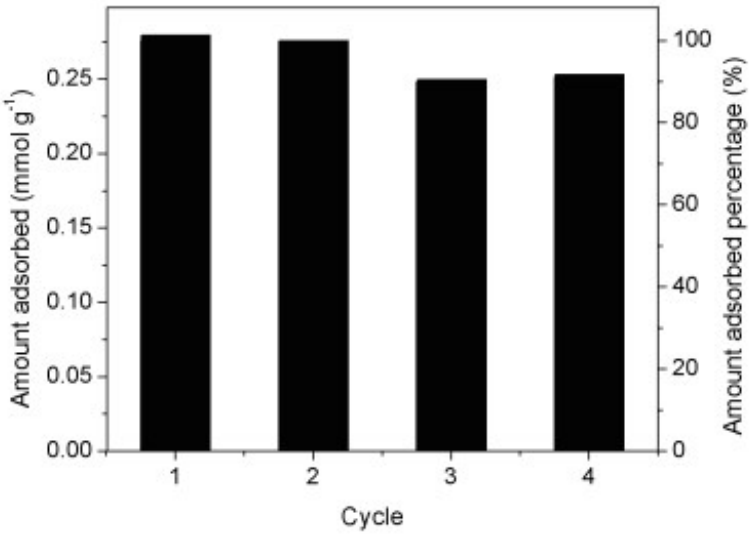


**Figure S2**. The recycle adsorption tests of a 4-nitrophenol aqueous solution (0.1mM) for BnCD-HCPP. The percentage adsorbed is the adsorbed amount in each cycle divided by that in the first cycle.

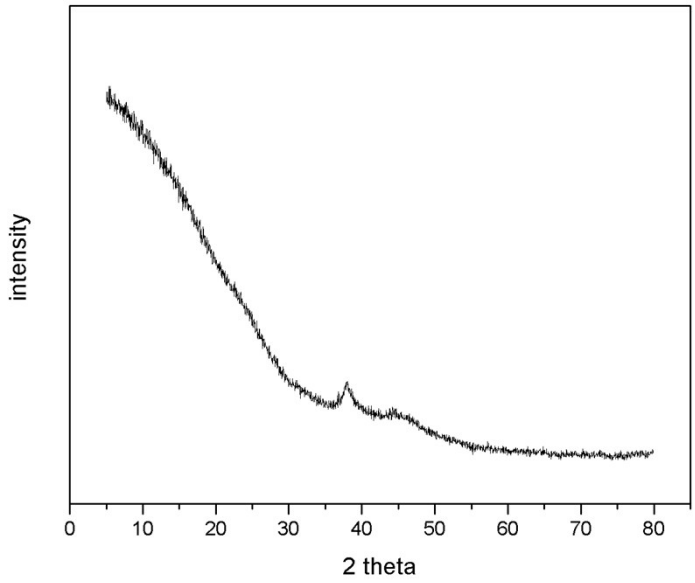


**Figure S3**. XRD pattern of Au@BnCD-HCPP.

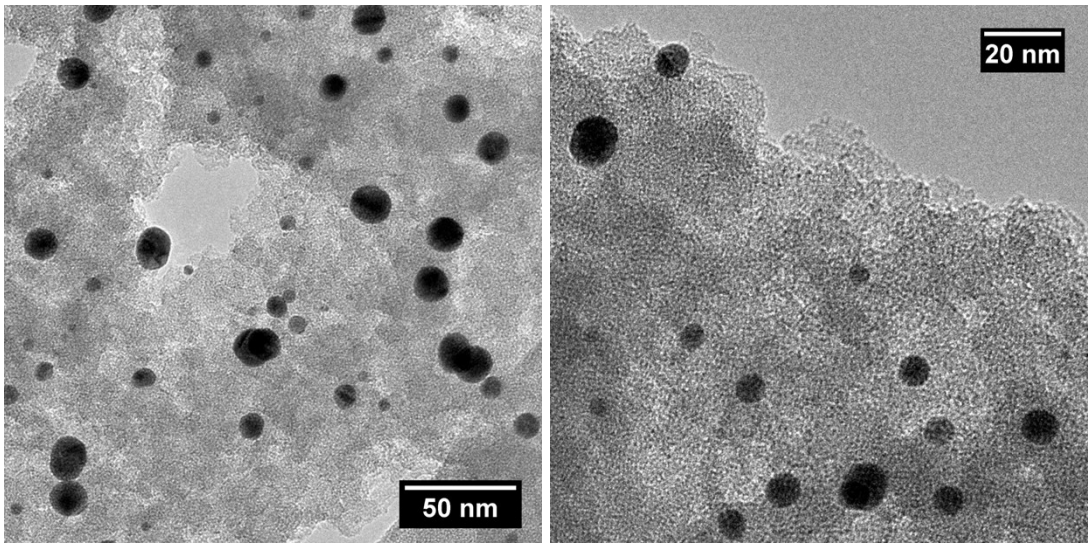


**Figure S4**. TEM images of Au@ BnCD-HCPP.

**Table S1**. Comparison of the adsorbed amount ($q_e$) and distribution coefficients ($K_d$) for aromatic molecules adsorption from water by different materials. (some $K_d$ values are calculated based on the experimental conditions listed in the reference)

| Material | Aromatic molecules | Initial concentration (mmol/L) | Equilibrium concentration (mmol/L) | $q_e$ (mmol/g) | $K_d$ (mL/g) | Ref. |
|---|---|---|---|---|---|---|
| BnCD-HCP | 4-nitrophenol | $3*10^{-3}$~0.2 | $3*10^{-5}$~0.1 | 0.02~0.47 | $4.6*10^3$~$6.0*10^5$ | Our work |
| | Phenol | $5*10^{-3}$~1 | $1.5*10^{-3}$~0.8 | 0.02~0.65 | $7.4*10^2$~$1.3*10^4$ | Our work |
| | 4-chlorophenol | $8*10^{-3}$~0.98 | $9*10^{-4}$~0.7 | 0.04~1.10 | $1.4*10^3$~$3.9*10^4$ | Our work |
| $Fe_3O_4$@$SiO_2$-PGMACD | bisphenol-A | 0.2 | - | 0.13 | $2.0*10^3$ | S1 |
| CD-HMS (8%) | 4-nitrophenol | - | 0-0.1 [a] | 0.36 | $1*10^3$~$1*10^4$ [a] | S2 |
| | Phenol | - | 0-0.3 [a] | 0.15 | $1*10^{2.5}$~$1*10^{3.9}$ [a] | S2 |
| | 4-chlorophenol | - | 0-0.2 [a] | 0.18 | $1*10^{2.5}$~$1*10^{3.5}$ [a] | S2 |
| SCD-ZnAl LDH | Hydroquinone (for 2 days) | 0.5 (mg/mL) | 0.19(mg/mL) | 0.47 | 101 | S3 |
| | 2,3-dimethylphenol (for 2days) | 0.5 (mg/mL) | 0.04(mg/mL) | 0.49 | 18 | S3 |
| beta-CDP (max capacity) | bisphenol A | 0.5 | | 0.25 | 1000 | S4 |
| CD-zeolite | p-nitrophenol | 0.72 (100mg/L) | - | 0.002 (0.25mg/g) | - | S5 |

a) The data was directly read from the figures in this reference

**REFERENCE**

[S1] Kang, Yan. et al. β-Cyclodextrin-modified hybrid magnetic nanoparticles for catalysis and adsorption J. Mater. Chem., 2011, 21, 3704-3710

[S2] Bibby, A. & Mercier, L. Adsorption and separation of water-soluble aromatic molecules by cyclodextrin-functionalized mesoporous silica. Green. Chem., 2003, 5, 15-19.

[S3] Xue, X. et al. Nanocage Structure Derived from Sulfonated β-Cyclodextrin Intercalated Layered Double Hydroxides and Selective Adsorption for Phenol Compounds. Inorg. Chem. 2014, 53, 1521−1529

[S4] Hiroyuki Kono,Taichi Nakamura. Polymerization of β-cyclodextrin with 1,2,3,4-butanetetracarboxylic dianhydride: Synthesis, structural characterization, and bisphenol A adsorption capacity. Reactive & Functional Polymers, 2013, 73, 1096–1102

[S5] Li, XH.; Zhu, K.; Hao, XK. Surface modification of zeolite with beta-cyclodextrin for removal of p-nitrophenol form aqueous solution. Water Science and Technology, 2009, 60, 329-337.