Electronic Supplementary Information (ESI)

One-Dimensional Channels Constructed from per-Hydroxylated Pillar[6]arene Molecules for Gas and Vapour Adsorption

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Experimental section

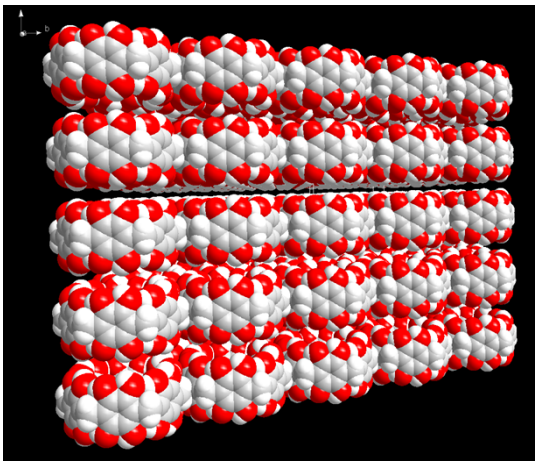
Materials. All solvents and reagents were used as supplied. *per*-hydroxylated pillar[6]arene (**1**) was synthesized according to the previous paper.[S1]

Measurements. The ^{1}H NMR spectra were recorded at 500 MHz with a JEOL-ECA500 spectrometer. Gas and vapor sorption isotherms were obtained by a BELSORP-max (BEL Japan Inc., Osaka, Japan) sorption analyzer. The surface area was calculated by the Brunauer−Emmett−Teller (BET) method. Powder XRD patterns were obtained on Smart Lab (Rigaku) with CuKα radiation (tube voltage, 40 kV, tube current, 20 mA).

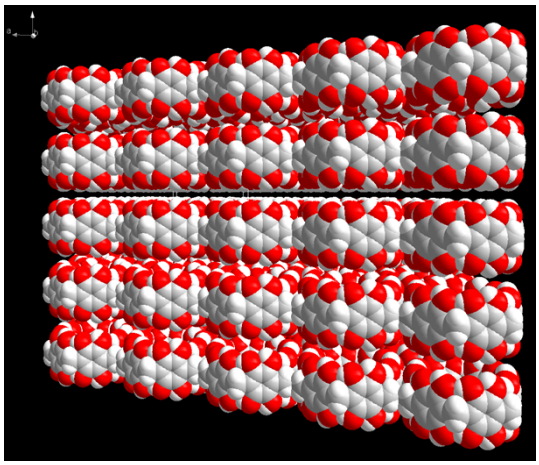
Sample Preparation. 1 was dissolved in acetone, and then the evaporation of the acetone afforded the one-dimensional channels. Heating the powder **1** at 120 ^{o}C for 48 h afforded the powder of **1** with pores.

Detail x-ray single-crystal structures of per-hydroxylated pillar[6]arene 1

(b) from *a* axis



(a) from *b* axis



(c) from *c* axis

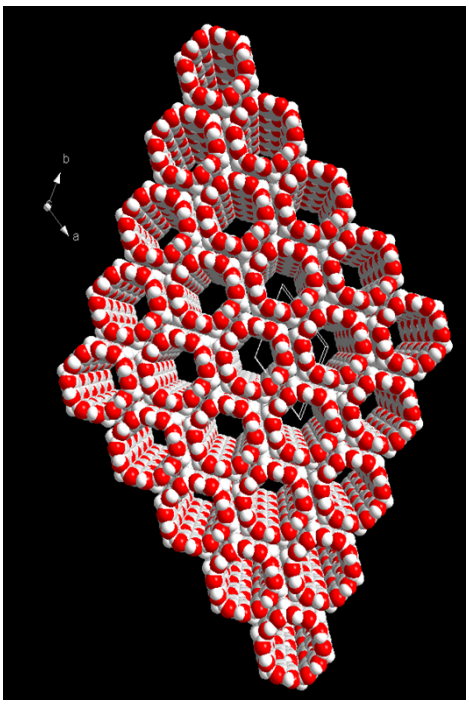


Fig. S1 X-ray single-crystal structures of per-hydroxylated pillar[6]arene from the (a) *a*, (b) *b* and (c) *c* axis.[S1] Solvents are omitted for clarity. The hydroxyl groups are disordered.

-*[1]H NMR spectra of the powder of 1 before and after heating

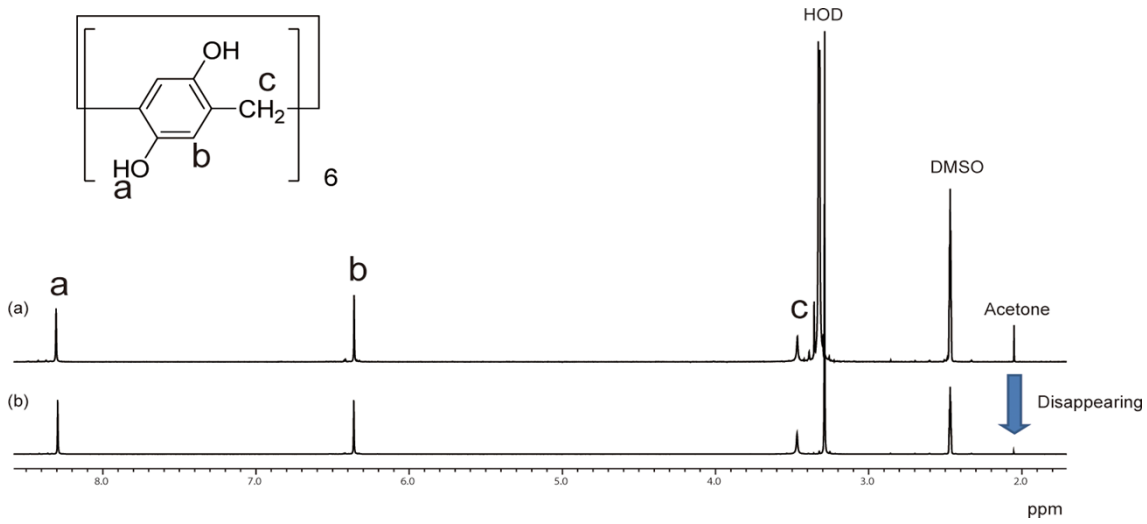


Fig. S2 [1]H NMR Spectra (DMSO-d_6, 25 °C) of the powder of **1** (a) before and (b) after heating at 120 °C for 48 h. Heating the powder of **1** at 120 °C for 48 h was sufficient to completely remove the acetone molecules.

Horvath-Kawazoe plots

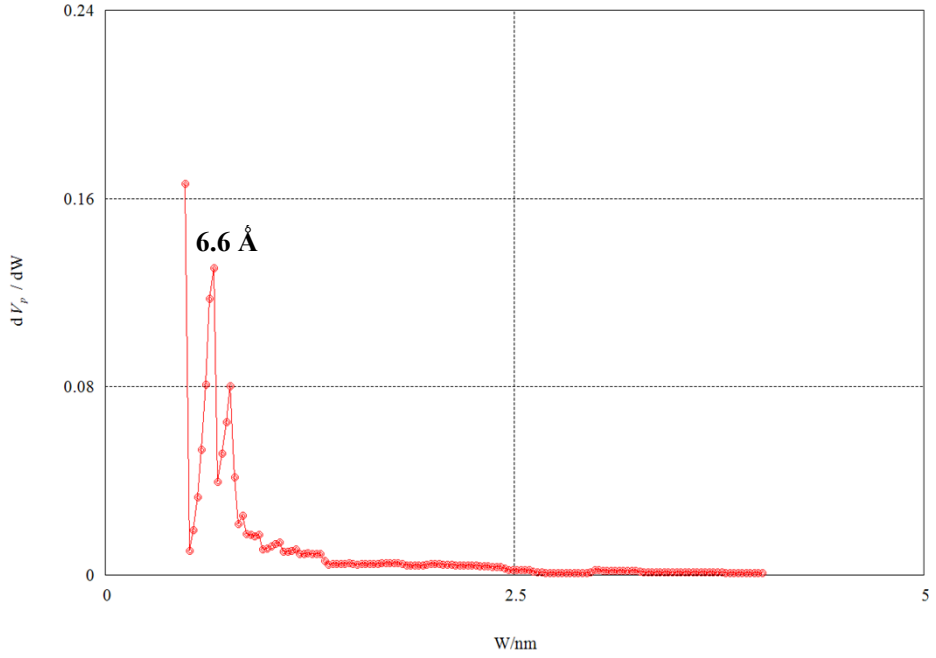


Fig. S3 Horvath-Kawazoe plots[S2] from nitrogen adsorption experiment at 77 K.

References

S1. Y. Ma, X. Chi, X. Yan, J. Liu, Y. Yao, W. Chen, F. Huang and J. L. Hou, *Org. Lett.*, 2012, **14**, 1532.
S2. G. Horvàth and K. Kawazoe, *J. Chem. Eng. Jpn.*, 1983, **16**, 470.