

## Supporting information

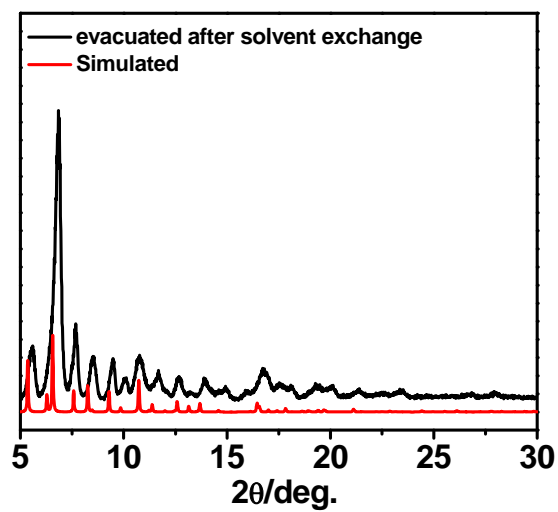
### Further Investigation of the Effect of Framework Catenation on Hydrogen Uptake in Metal-Organic Frameworks

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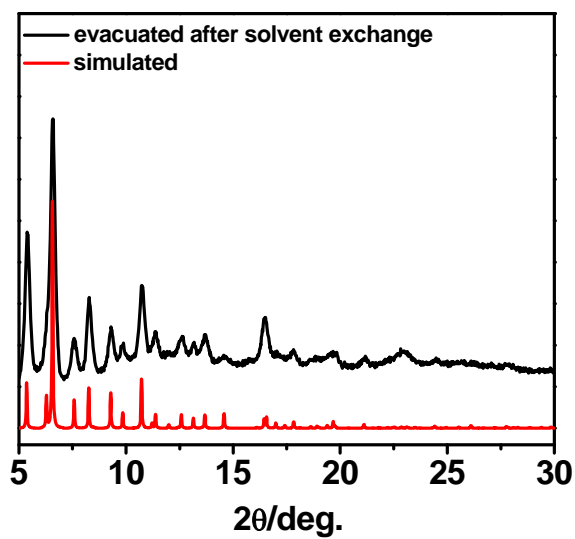
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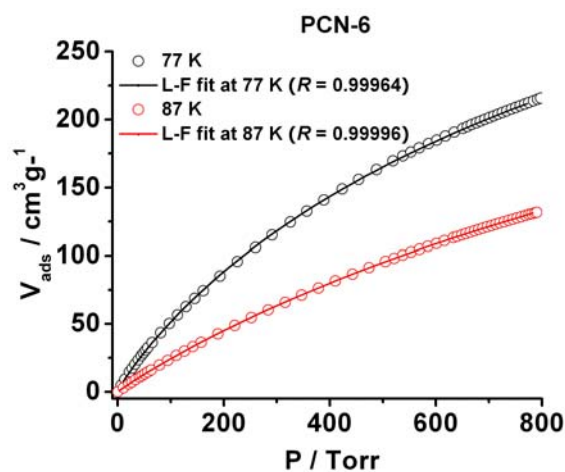


(a)

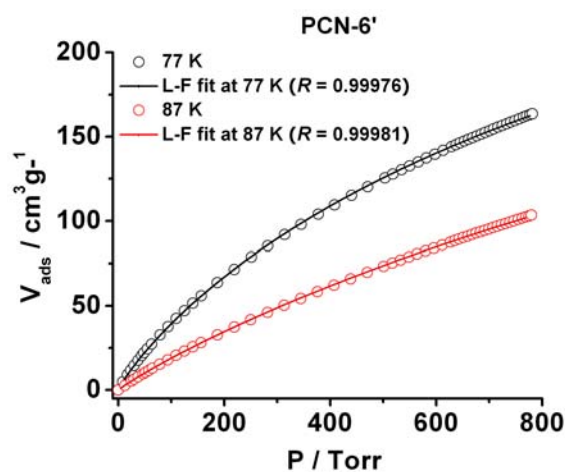


(b)

**Figure S1.** Powder X-ray diffraction patterns: (a) PCN-6; (b) PCN-6'.



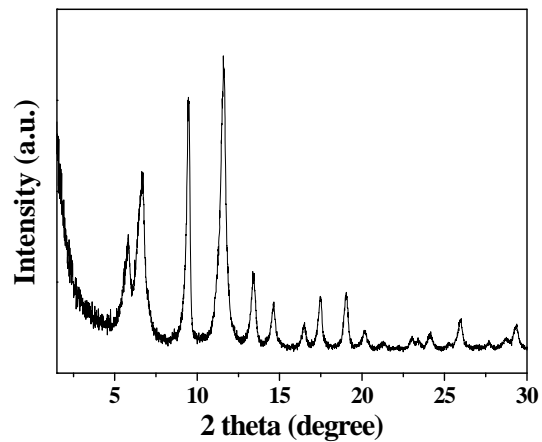
(a)



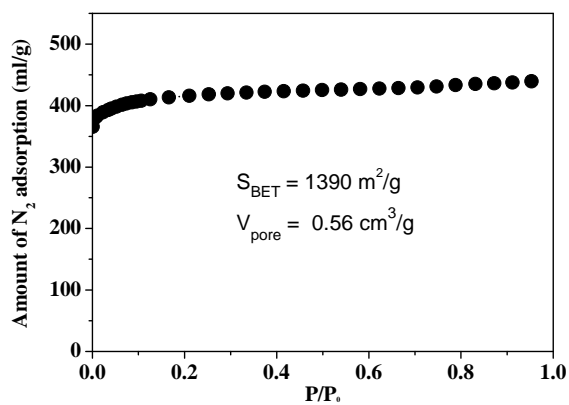
(b)

**Figure S2.** H<sub>2</sub> adsorption isotherms at 77 and 87 K fitted with Langmuir-Freundlich equation. (a) PCN-6; (b) PCN-6'.

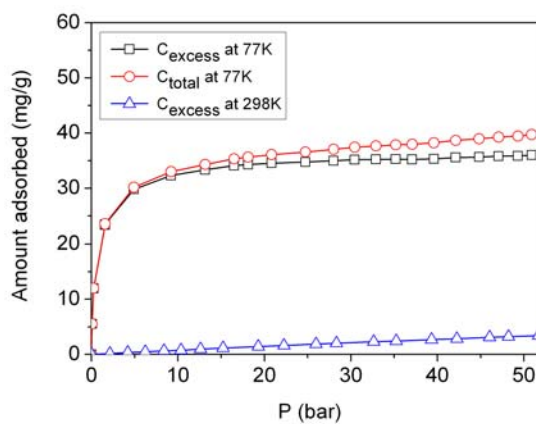
**Synthesis of Cu-BTC:** Cu-BTC was prepared under microwave irradiation: an exact amount of H<sub>3</sub>BTC (2.0 mmol) and copper(II) nitrate trihydrate, Cu(NO<sub>3</sub>)<sub>2</sub>·3H<sub>2</sub>O (3.65 mmol) were dissolved in 30 mL of a 1:1 mixture of water: ethanol. The mixture was transferred to a microwave Teflon reactor, stirred magnetically for a minute and was reacted at a temperature of 140 °C for 1 h under 300 W.



**Figure S3.** Powder X-ray diffraction pattern of Cu-BTC



**Figure S4.** N<sub>2</sub> adsorption isotherm of Cu-BTC at 77 K.



**Figure S5.** High pressure H<sub>2</sub> Sorption Isotherms for Cu-BTC