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Supplementary information

Creating hierarchical pores in metal–organic frameworks via postsynthetic reactions

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SUPPLEMENTARY INFORMATION

Creating Hierarchical Pores in Metal–Organic Frameworks via Post-Synthetic Reactions

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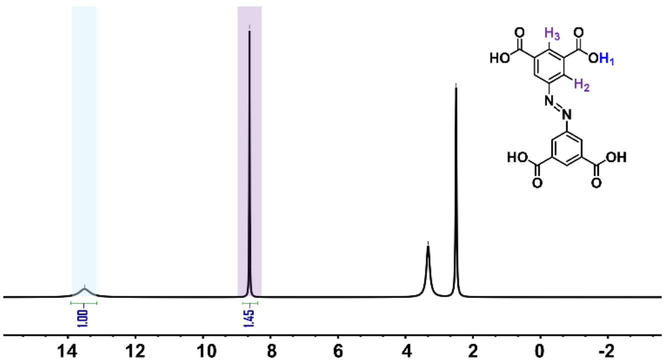
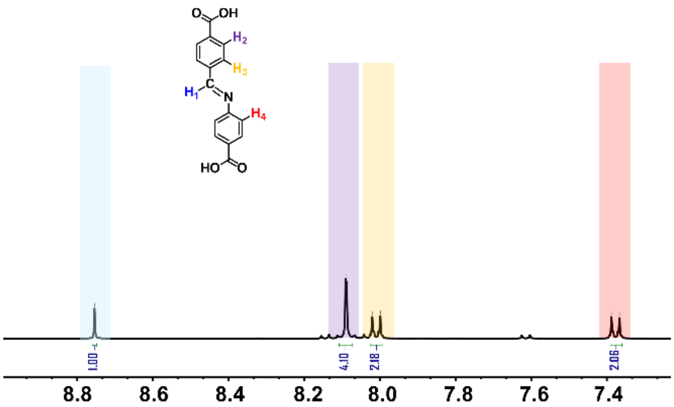
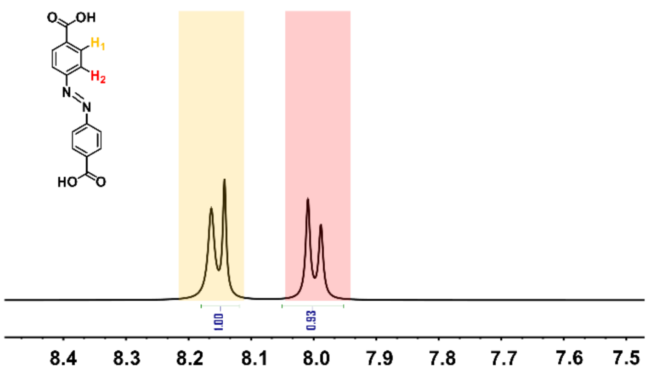


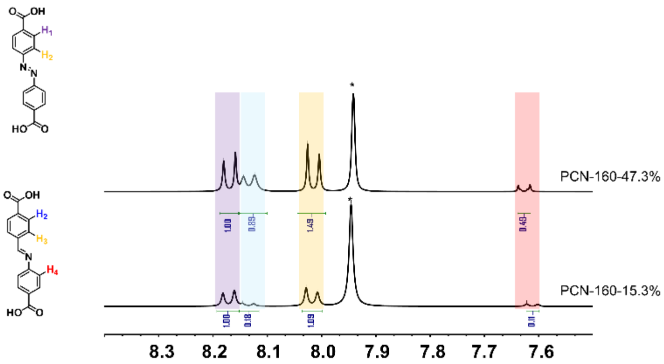
Supplementary Figure 1 | ^{1}H NMR spectrum of the H_4ABTC in DMSO-d_6. Note that the chemical shifts of H_2 and H_3 are too close to be distinguished. The peaks at 2.5 and 3.3 can be attributed to DMSO and DMSO-d_6, respectively.



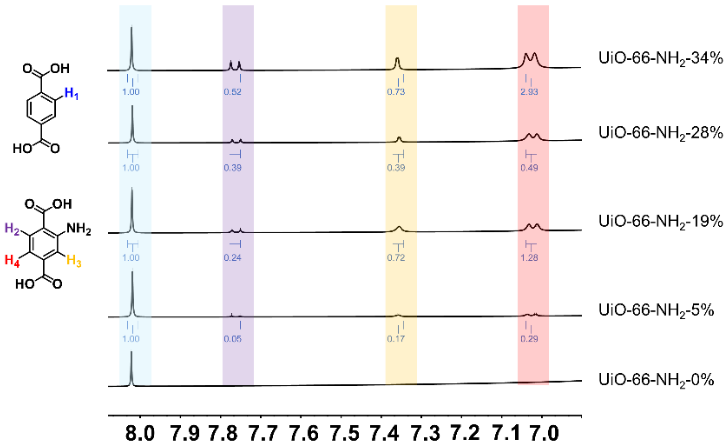
Supplementary Figure 2 | ^{1}H NMR spectrum of H_2CBAB in DMSO-d_6.



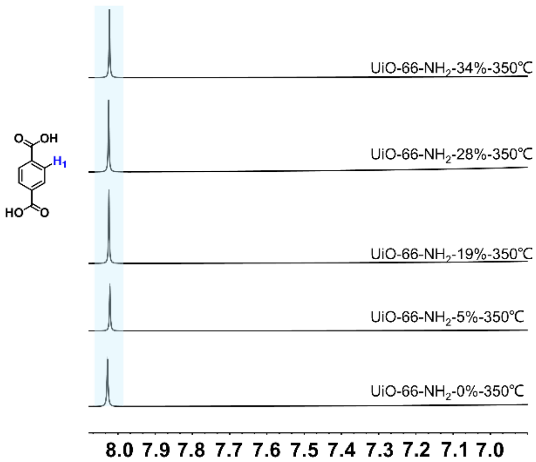
Supplementary Figure 3 | ^{1}H NMR spectrum of H_2AZDC in DMSO-d_6.



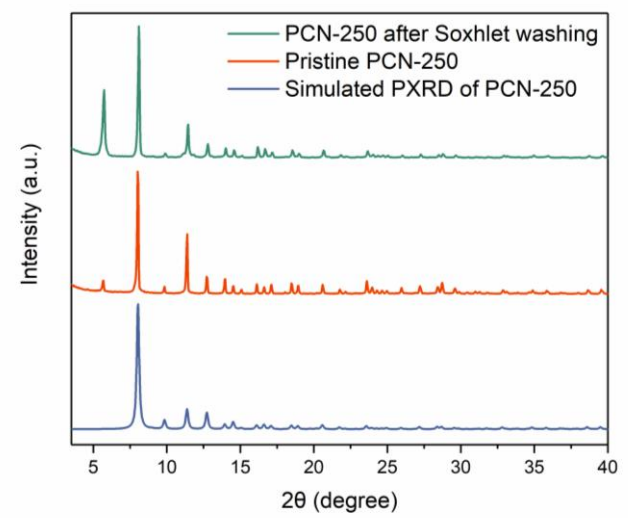
Supplementary Figure 4 | ^{1}H NMR spectrum of the decomposed PCN-160-CBAB-R% in DMSO-d_6. The peak with a star sign indicates the DMF residue.



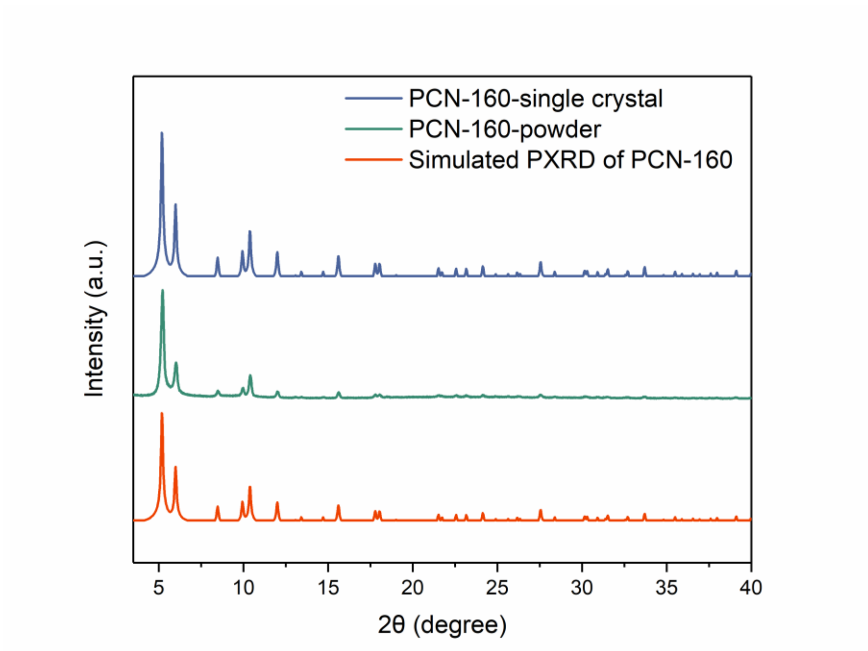
Supplementary Figure 5 | ^{1}H NMR spectrum of the decomposed UiO-66-NH_2-R% in DMSO-d_6.



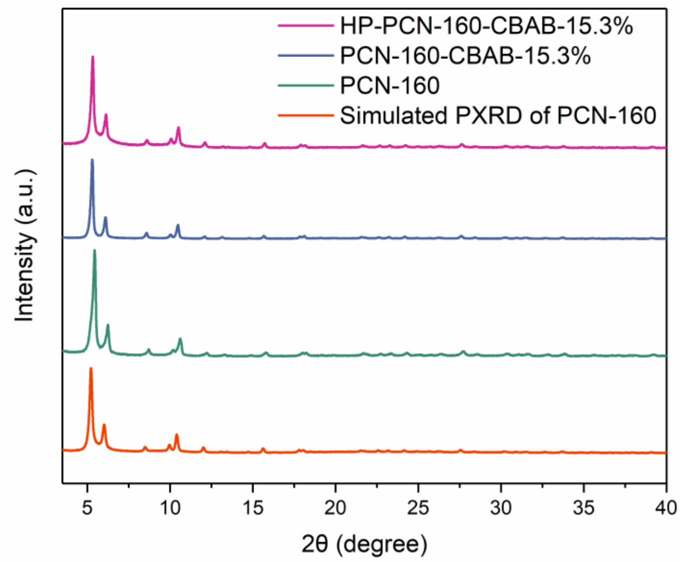
Supplementary Figure 6 | ^{1}H NMR spectrum of the UiO-66-NH_2-R% treated at 350°C.



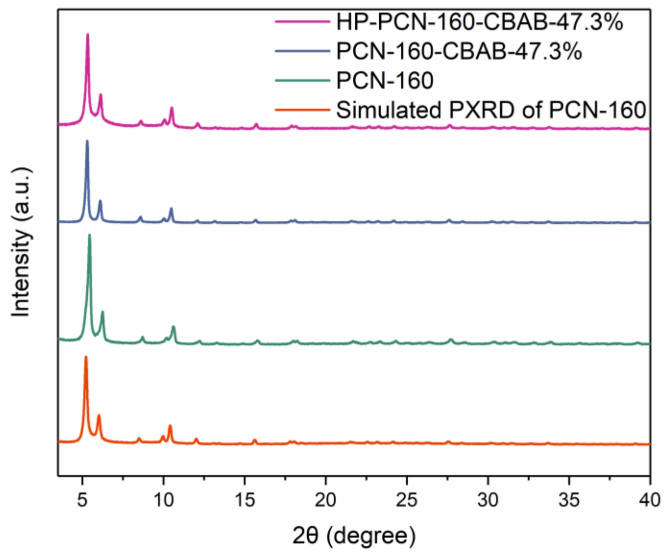
Supplementary Figure 7 | Powder X-ray diffraction results of the PCN-250 before and after Soxhlet washing. The data was collected on a Bruker Advance D8 powder X-ray diffractometer. a.u. represents arbitrary units.



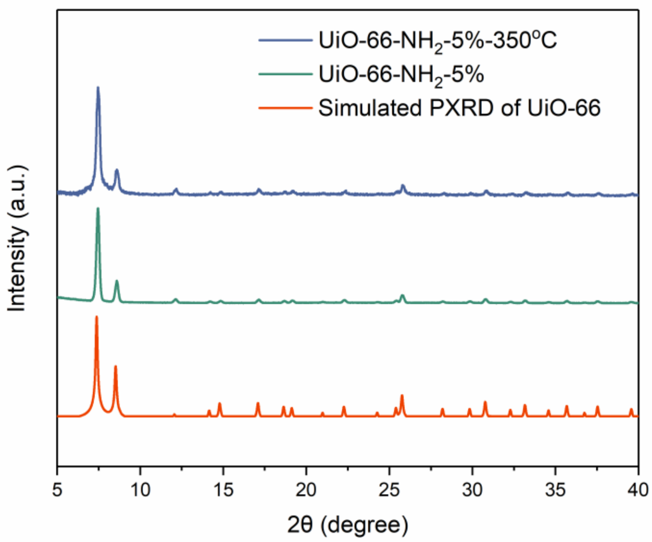
Supplementary Figure 8 | Powder X-ray diffraction results of the PCN-160 powder and single crystals.



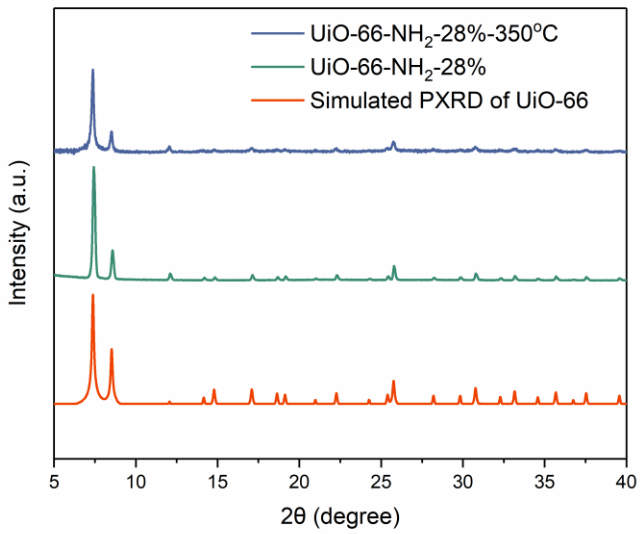
Supplementary Figure 9 | Powder X-ray diffraction results of the PCN-160-CBAB-15.3% before and after linker hydrolysis.



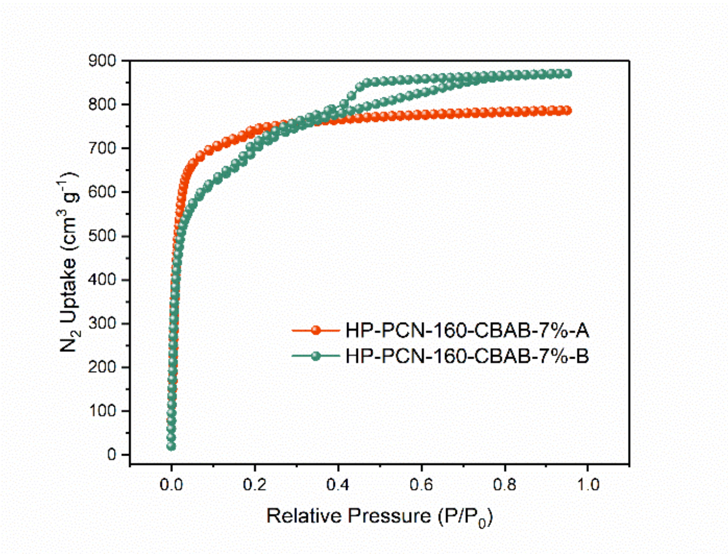
Supplementary Figure 10 | Powder X-ray diffraction results of the PCN-160-CBAB-47.3% before and after linker hydrolysis.



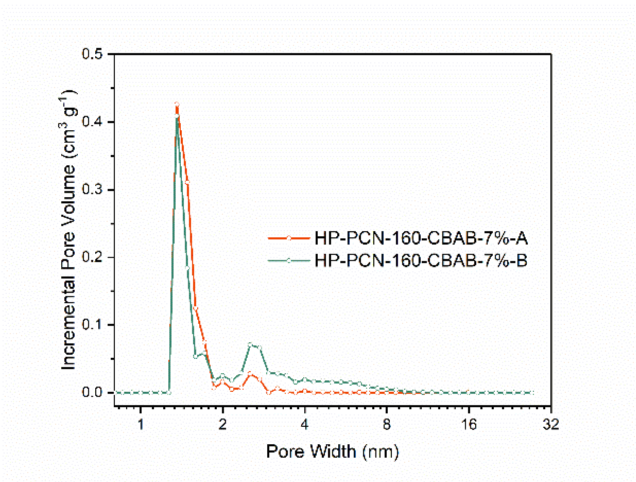
Supplementary Figure 11 | Powder X-ray diffraction results of the UiO-66-NH$_2$-5% before and after treatment under 350^{o}C.



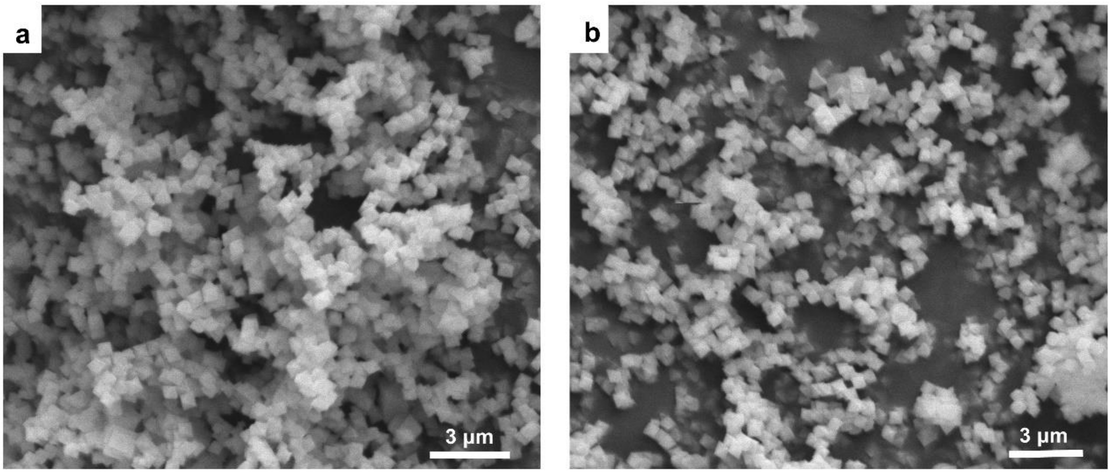
Supplementary Figure 12 | Powder X-ray diffraction results of the UiO-66-NH$_2$-28% before and after treatment under 350^{o}C.



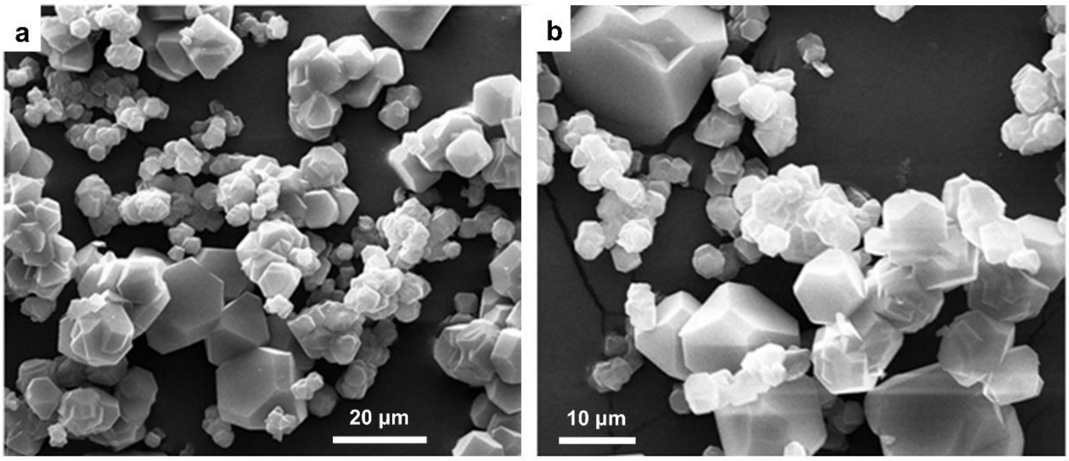
Supplementary Figure 13 | Nitrogen sorption isotherms of the hierarchically porous (HP) PCN-160-CBAB-7% that are (A) washed with acetone at room temperature and (B) washed with acetone at 40°C.



Supplementary Figure 14 | Pore size distribution of the hierarchically porous (HP) PCN-160-CBAB-7% that are (A) washed with acetone at room temperature and (B) washed with acetone at 40°C.



Supplementary Figure 15 | SEM images of (a) UiO-66-NH_2-28% and (b) UiO-66-NH_2-28%-350^oC.



Supplementary Figure 16 | SEM images of (a) pristine PCN-250 and (b) PCN-250 after Soxhlet washing.

Supplementary Table 1 | Porosity analysis of hierarchically porous MOFs reported in the protocol.

MOF	S_{BET} ($m^2\ g^{-1}$) [A]	D_{meso} (nm) [B]	V_{meso}/V_{micro} [C]
PCN-250 after Soxhlet washing	1416	6.7	0.099
HP-PCN-160-CBAB-0%	2704	2.5	0.036
HP-PCN-160-CBAB-15.3%	1988	6.0	1.51
HP-PCN-160-CBAB-47.3%	714	14.0	7.55
UiO-66-NH_2-0%-350°C	1327	-	0
UiO-66-NH_2-5%-350°C	902	3.5	1.15
UiO-66-NH_2-19%-350°C	818	3.9	1.24
UiO-66-NH_2-28%-350°C	780	4.7	1.67
UiO-66-NH_2-34%-350°C	890	3.5	1.27