

## SUPPORTING INFORMATION

**Systematic study of the impact of MOF densification into tablets on  
textural and mechanical properties**

**Table S1: Textural properties and resulting volumetric capacity of all MOF tablets**

**Figure S1: Thermogravimetric analyses of as-made MOF powders: UiO-66, UiO-66-NH<sub>2</sub>, UiO-67 and HKUST-1**

**Table S2: Weight losses from TGA and corresponding linker defects of as-made MOF powders**

**Figure S2: SEM images of HKUST-1 optimized tablet after the tensile strength test**

**Figure S3: SEM images of UiO-66-NH<sub>2</sub> optimized tablet after the tensile strength test**

**Figure S4: SEM images of UiO-67 optimized tablet after the tensile strength test**

**Figure S5: SEM images of UiO-66 optimized tablet after the tensile strength test**

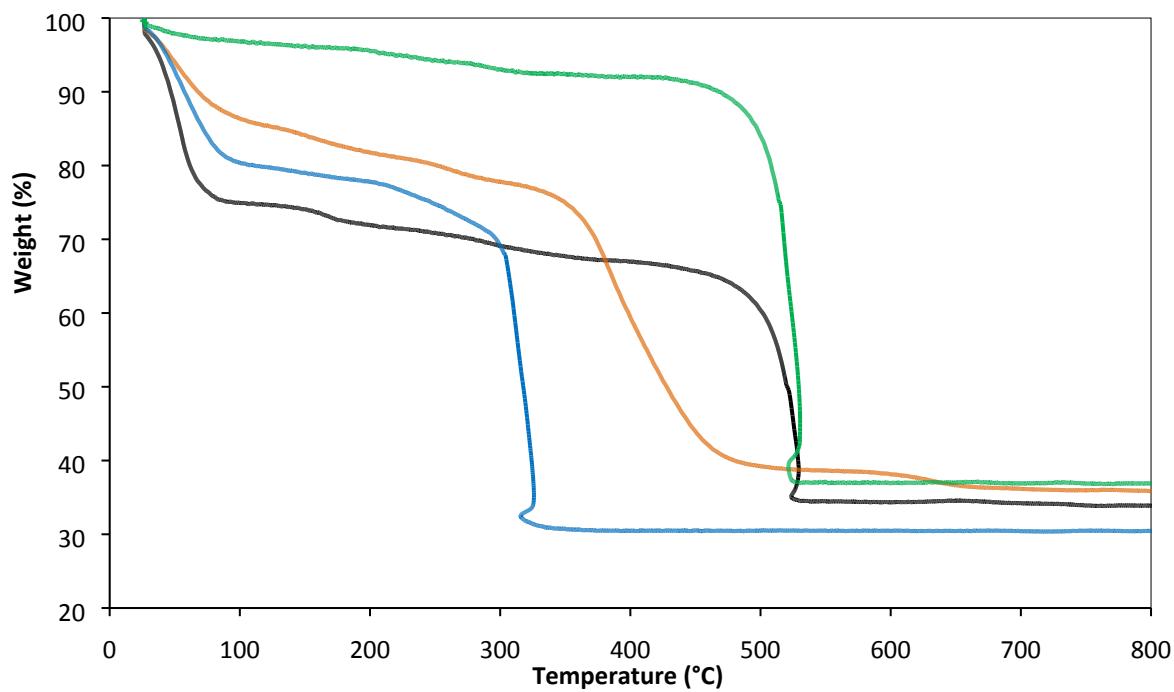
**Figure S6: Correlations between the micropore volume and the BET specific surface area ; and between the volumetric capacity and the volumetric surface: UiO-66, UiO-66-NH<sub>2</sub>, UiO-67 and HKUST-1**

**Figure S7: Powder XRD patterns of UiO-66 and UiO-66-NH<sub>2</sub> tablets as-made, and after ageing**

**Figure S8: Powder XRD patterns of UiO-67 and HKUST-1 tablets as-made, and after ageing**

**Table S1: Textural properties and resulting volumetric surface of all MOF tablets**

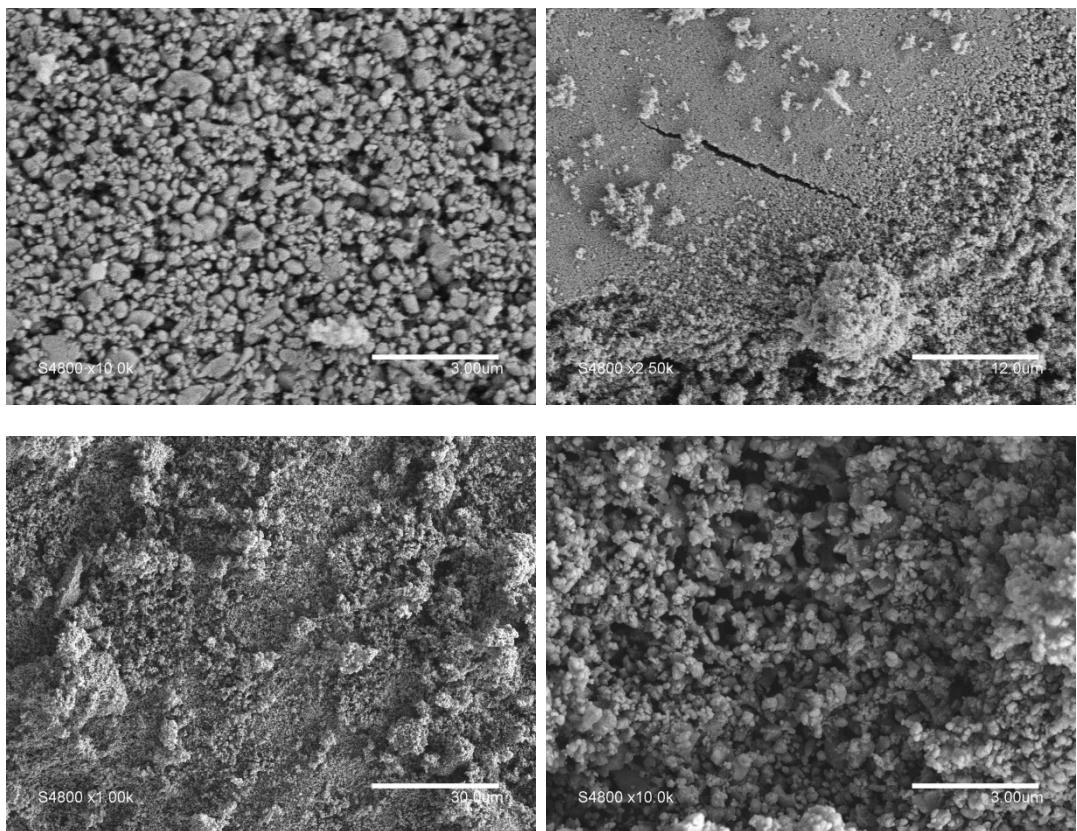
MOF	Pressure (MPa)	Tensile strength (MPa)	SSA (m <sup>2</sup> /g)	V <sub>micro.</sub> (cm <sup>3</sup> /g)	Bulk density (g/cm <sup>3</sup> )	Density (%crystal)	V <sub>surf.</sub> (m <sup>2</sup> /cm <sup>3</sup> )	V <sub>cap.</sub> (cm <sup>3</sup> /cm <sup>3</sup> )
UiO-66*	As-made powder		1426	0.54	0,17	14,0%	242	0.09
	9	0.24	1382	0.47	0,38	31,3%	525	0.18
	18	0.40	1459	0.54	0,43	35,4%	627	0.23
HKUST-1	As-made powder		1288	0.49	0,48	40,0%	618	0.24
	14	0.15	1191	0.43	0,67	55,8%	798	0.29
	24	0.24	1145	0.42	0,70	58,3%	802	0.29
	62	0.78	1133	0.42	0,79	65,8%	895	0.33
	121	1.78	1091	0.40	0,90	75,0%	982	0.36
HKUST-1 + 1wt% ENG	As-made powder		1246	0.46	0,48	40,0%	598	0.22
	14	0.13	1206	0.45	0,68	56,7%	820	0.31
	65	0.91	1137	0.42	0,80	66,7%	910	0.34
	120	1.74	1086	0.40	0,90	75,0%	977	0.36
HKUST-1 + 2wt% ENG	As-made powder		1105	0.42	0,48	40,0%	530	0.20
	23	0.37	1049	0.40	0,71	59,2%	745	0.28
	57	0.99	1006	0.38	0,81	67,5%	815	0.31
	112	1.80	949	0.35	0,93	77,5%	883	0.33
UiO-67	As-made powder		2034	0.90	0,25	35,3%	509	0.23
	17	0.56	1904	0.80	0,39	55,1%	743	0.31
	41	1.28	1832	0.76	0,51	72,0%	934	0.39
	63	2.22	1549	0.70	0,62	87,6%	960	0.43
	82	-	397	0.22	0,70	98,9%	278	0.15
	As-made powder		842	0.34	0,41	32,4%	345	0.14
UiO-66-NH <sub>2</sub>	14	0.24	816	0.33	0,50	39,6%	408	0.17
	26	0.46	796	0.32	0,49	38,8%	390	0.16
	57	1.48	697	0.29	0,72	57,0%	502	0.21
	164	4.18	625	0.25	0,93	73,6%	581	0.23



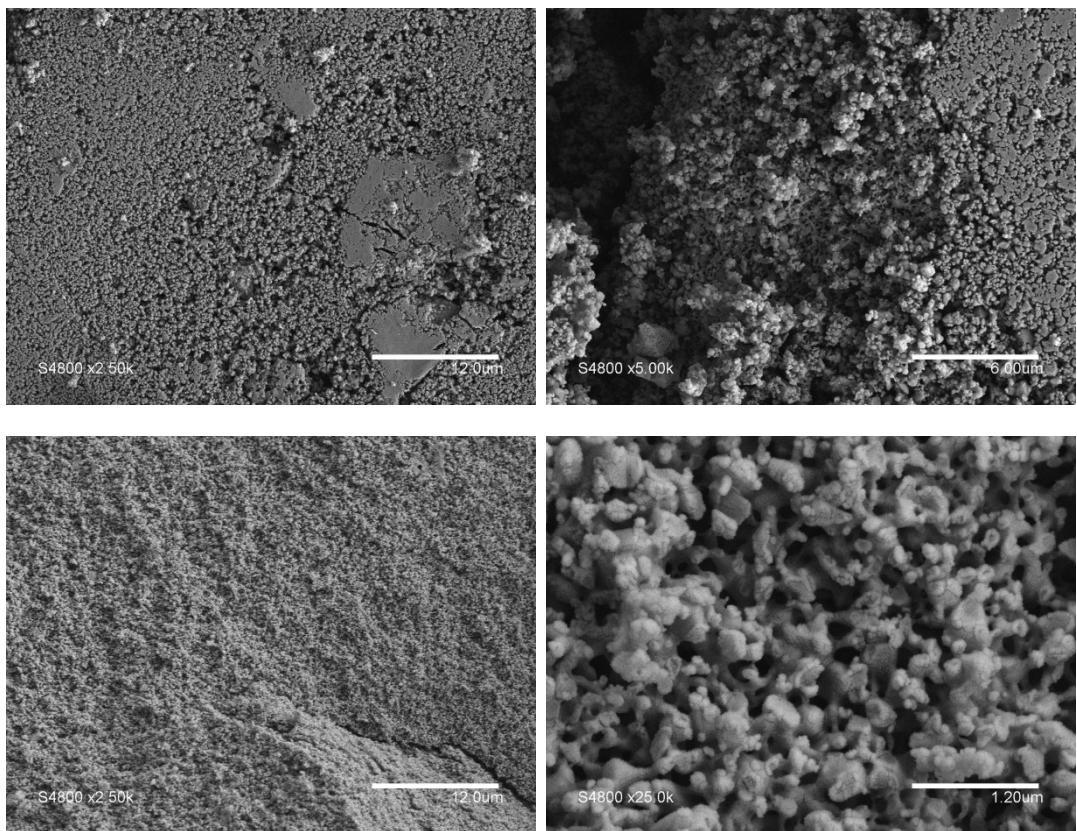
**Figure S1:** Thermogravimetric analyses of as-made MOF powders: UiO-66 (black), UiO-66-NH<sub>2</sub> (orange), UiO-67 (green) and HKUST-1 (blue)

**Table S2:** Weight losses from TGA and corresponding linker defects of as-made MOF powders

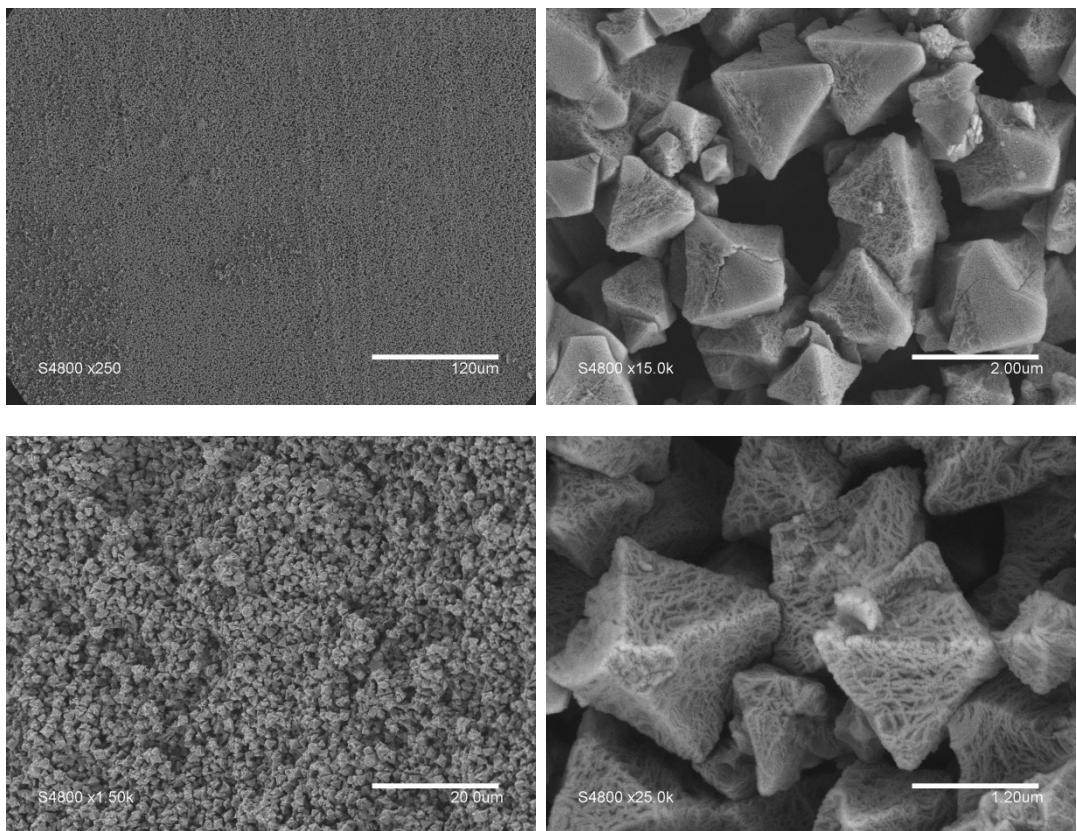
MOF	Solvents and dehydroxylation	Linker	Remaining metal oxide	Linker defects
UiO-66	33%	33%	34%	17%
UiO-66-NH <sub>2</sub>	23%	38%	39%	25%
UiO-67	8%	55%	37%	17%
HKUST-1	28%	42%	30%	10%



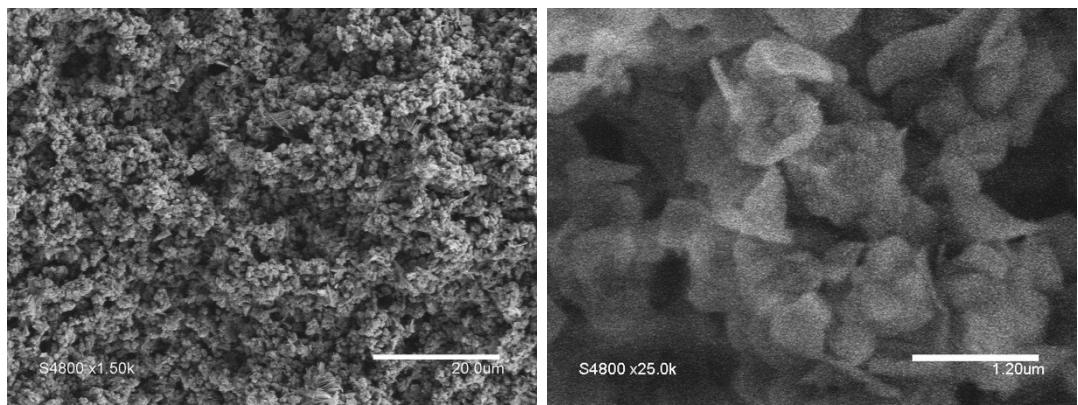
**Figure S2:** SEM images of HKUST-1 optimized tablet on its flat surface (top left), at the fracture (top right), and on its fractured section (bottom).



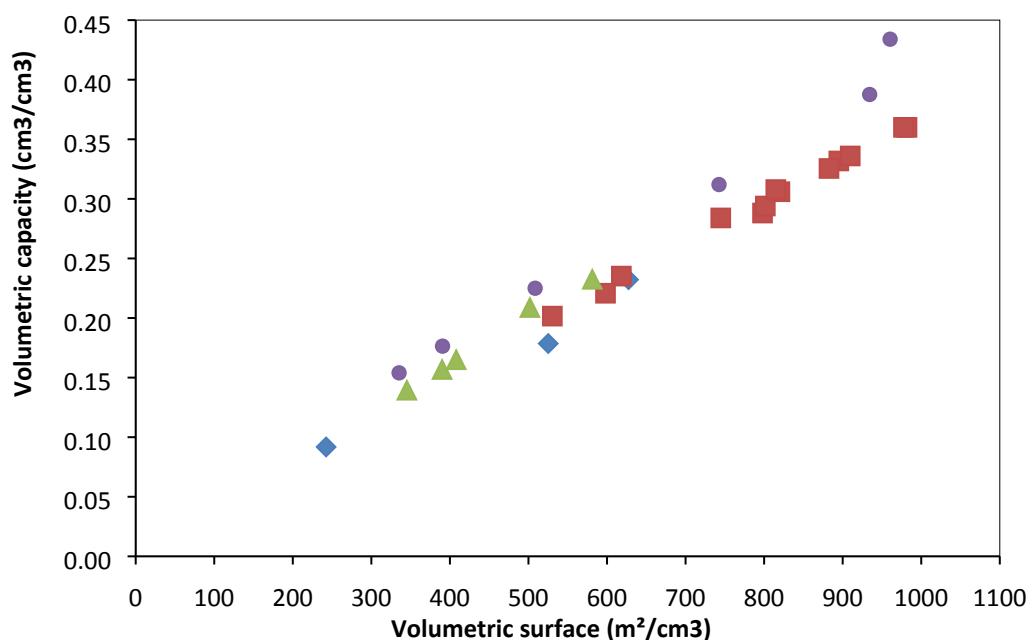
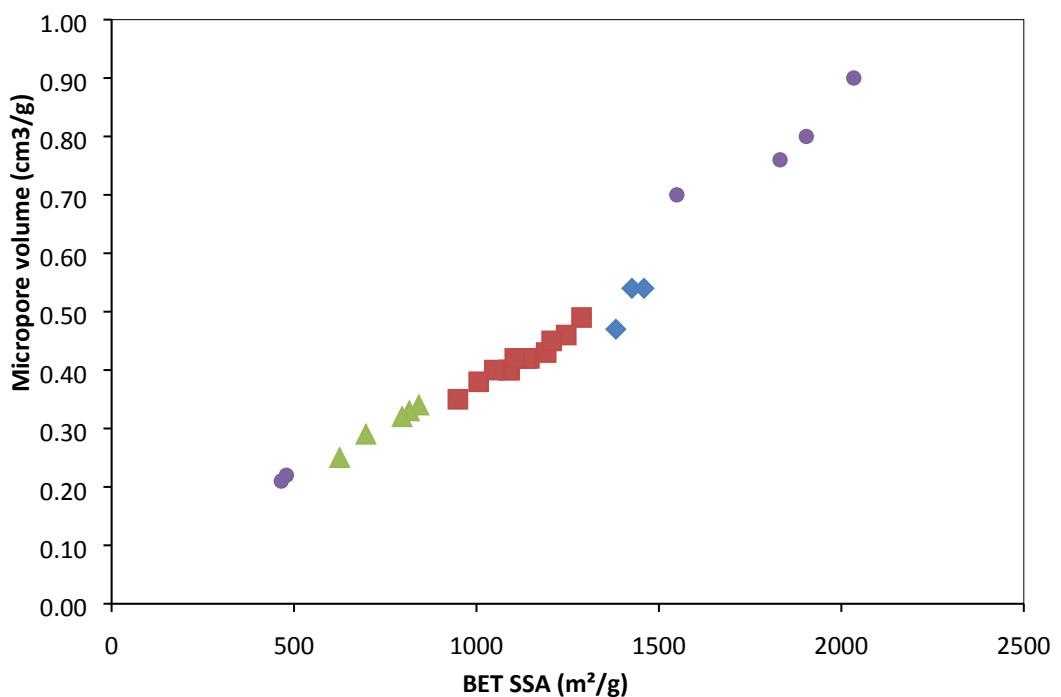
**Figure S3:** SEM images of  $\text{UiO-66-NH}_2$  optimized tablet on its flat surface (top left), at the fracture (top right), and on its fractured section (bottom).



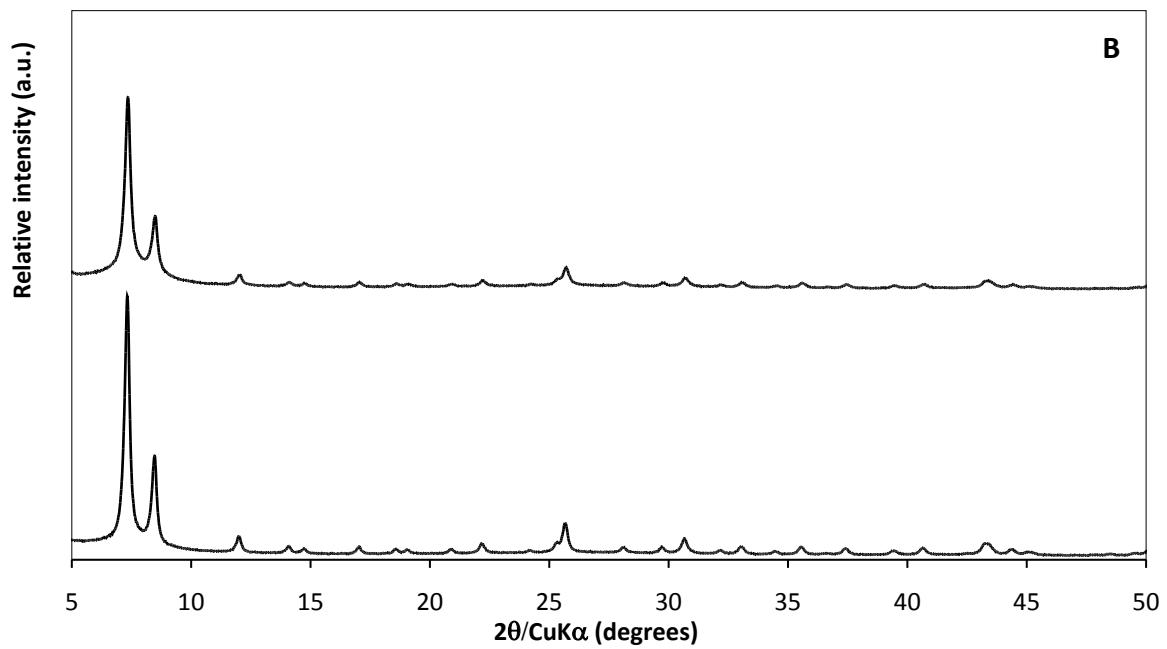
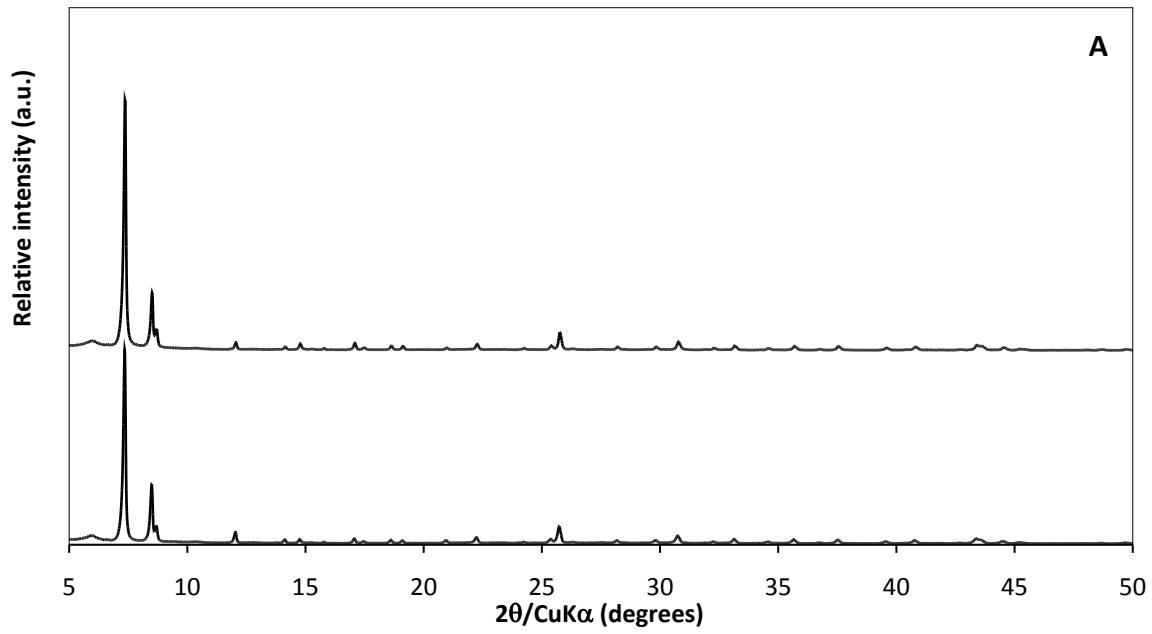
**Figure S4: SEM images of UiO-67 optimized tablet on its flat surface (top), and on its fractured section (bottom).**



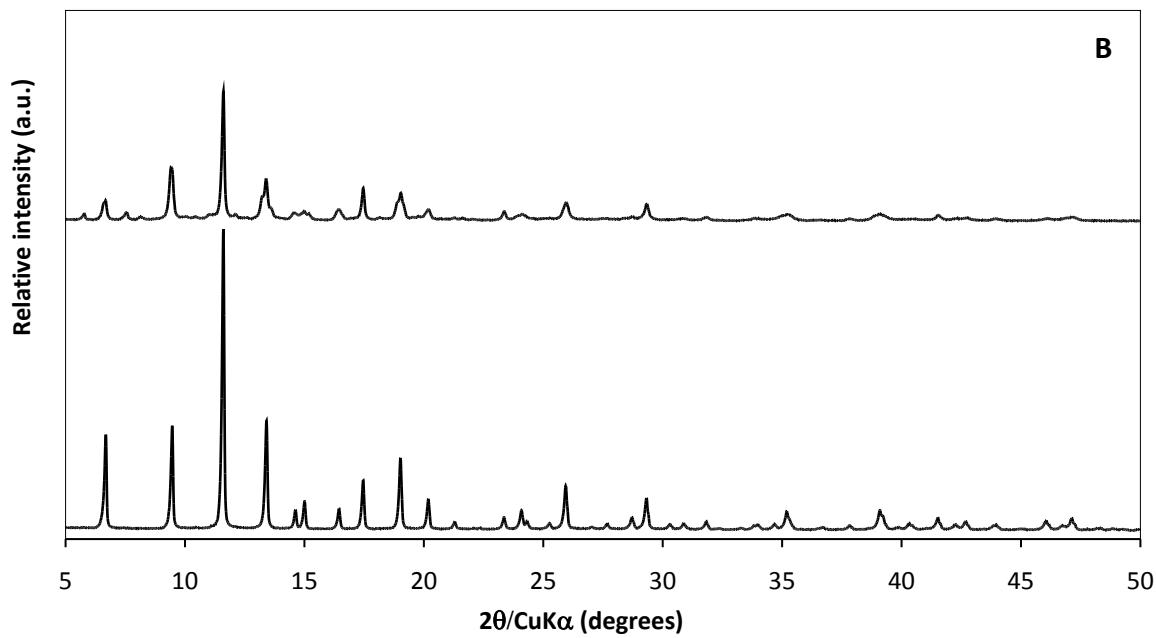
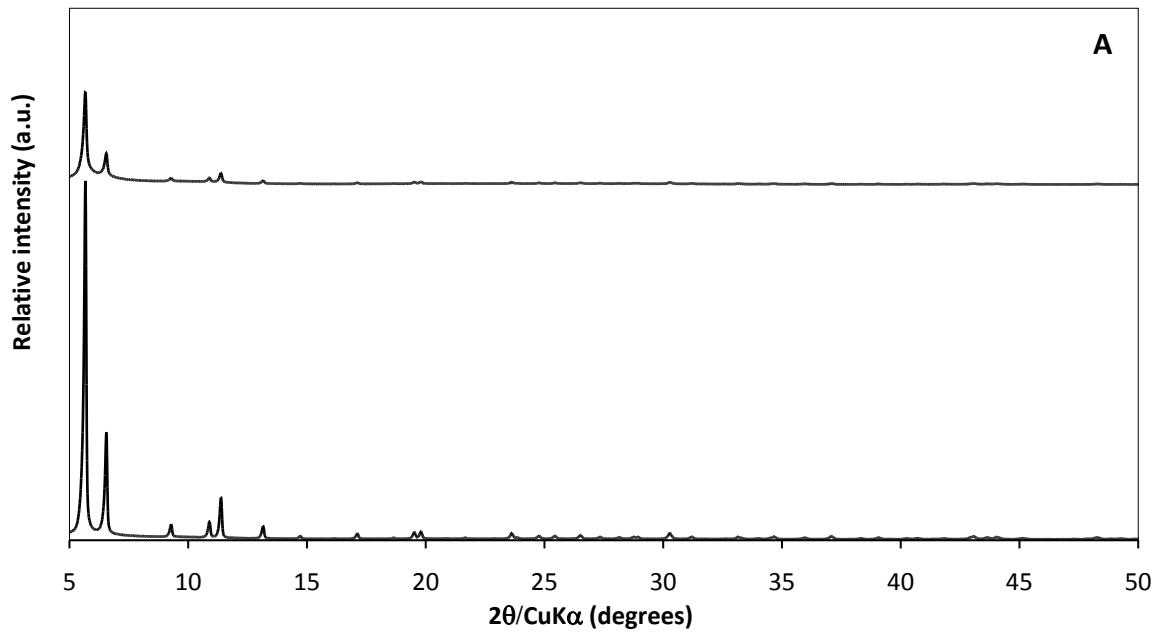
**Figure S5: SEM images of UiO-66 optimized tablet on its fractured section.**



**Figure S6:** Correlations between the micropore volume and the BET specific surface area (up) ; and between the volumetric capacity and the volumetric surface (down) for UiO-66 (blue rhombus), UiO-66-NH<sub>2</sub> (green triangle), UiO-67 (violet round) and HKUST-1 (red square).



**Figure S7:** Powder XRD patterns of UiO-66 (A) and UiO-66-NH<sub>2</sub> tablets as-made (top) and after ageing (bottom).



**Figure S8:** Powder XRD patterns of UiO-67 (A) and HKUST-1 (B) tablets as-made (top) and after ageing (bottom).