

SUPPORTING INFORMATION

Highly sensitive humidity-driven actuators based on metal-organic frameworks in mixed matrix films

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Tables and Figures

Table S1. The equilibrium relative humidity of the selected saturated salt solution

Temperature (°C)	MgCl ₂	K ₂ CO ₃	NaBr	NaCl	KCl
15	33.30±0.21	43.15±0.33	60.68+0.51	75.61±0.18	85.92+0.33
20	33.07±0.18	43.16±0.33	59.14+0.44	75.47±0.14	85.11+0.29
25	32.78±0.16	43.16±0.39	57.57+0.40	75.29±0.13	84.34+0.26
30	32.44±0.14	43.17±0.50	56.03+0.38	75.09±0.11	83.62+0.25
35	32.05±0.13	/	54.55+0.38	74.87±0.12	82.95+0.25

Table S2. Nitrogen physical adsorption analysis of bare MIL-88A and MIL-88A@TPU films with different MIL-88A loadings.

Samples	MOF loading (wt.%)	Pore size (nm)	BET surface area (m ² /g)	Pore volume (cm ³ /g)
MIL-88A	100	2.2383	281.5826	0.064356
90MOF@TPU	90	8.0425	20.6899	0.037857
80MOF@TPU	80	10.8079	9.5886	0.022911
70MOF@TPU	70	7.5782	32.8715	0.055694
60MOF@TPU	60	7.9057	18.1818	0.032026
TPU	0	3.8887	7.8322	0.007614

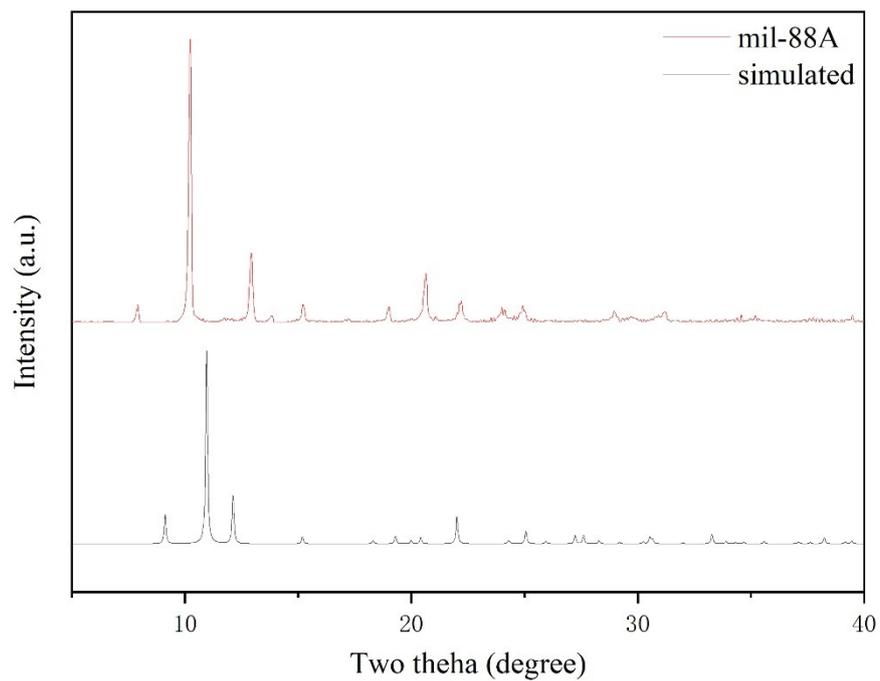


Figure S1. PXRD of as-synthesized MIL-88A(Fe) used in this study with the calculated powder pattern for comparison.

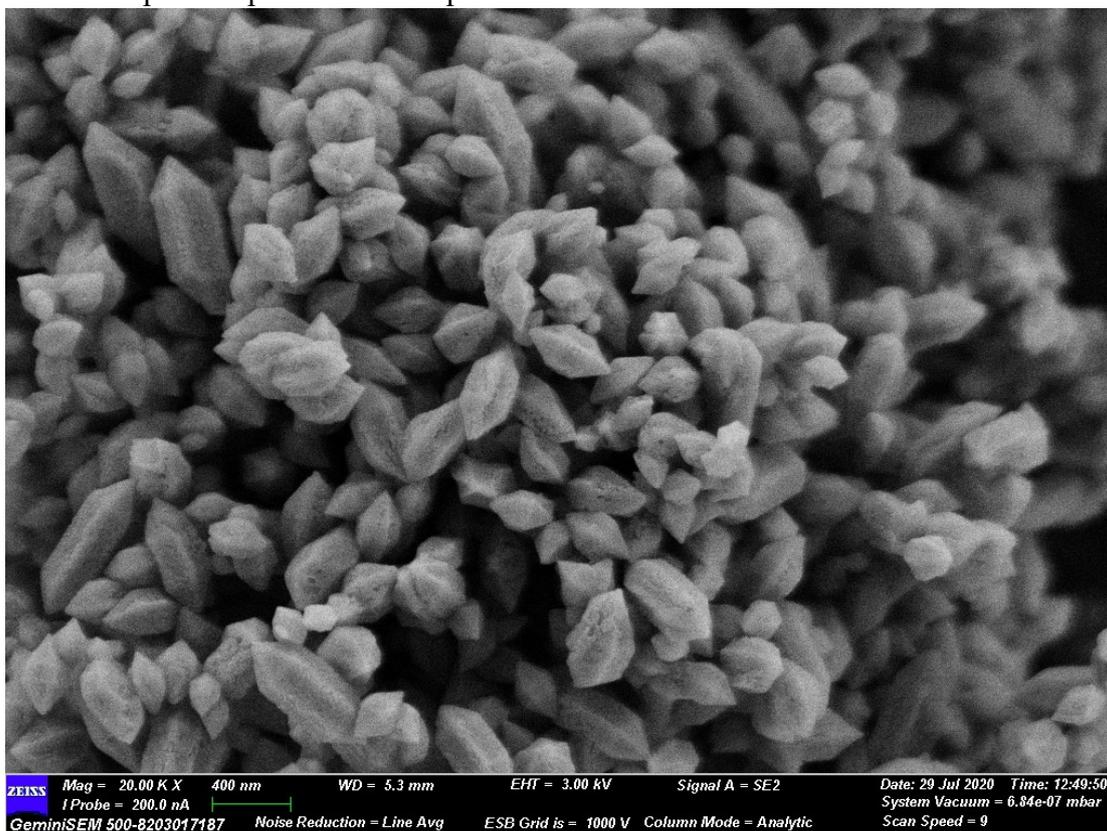


Figure S2. SEM image of the MIL-88A(Fe) used in this study.

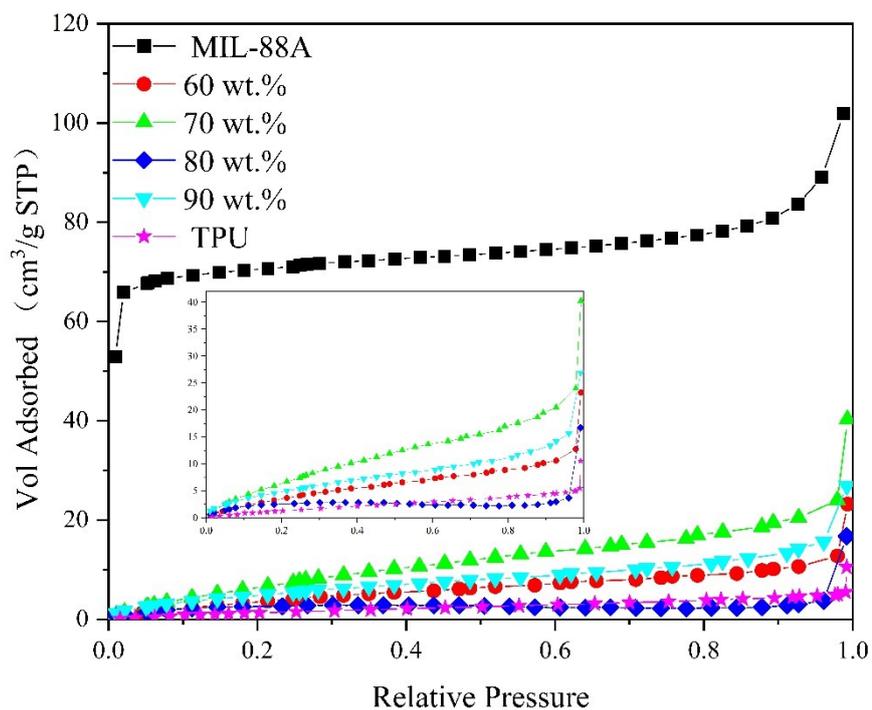


Figure S3. Nitrogen physisorption isotherms at 77 k of bare MIL-88A and MIL-88A@TPU films with different MIL-88A loadings.

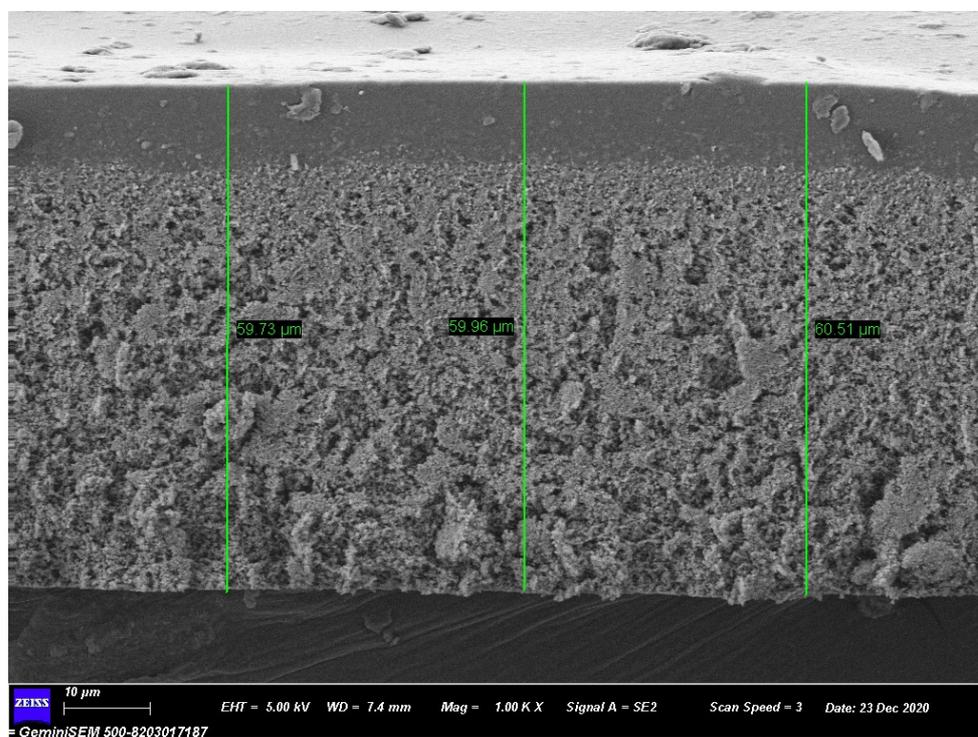


Figure S4. SEM cross-sectional image of MIL-88A@TPU films with 60 wt.% MIL-88A loadings.