SUPLIMENTARY MATERIALS

Shaping of Porous Metal–Organic Framework Granules Using Mesoporous ρ-Alumina as Binder

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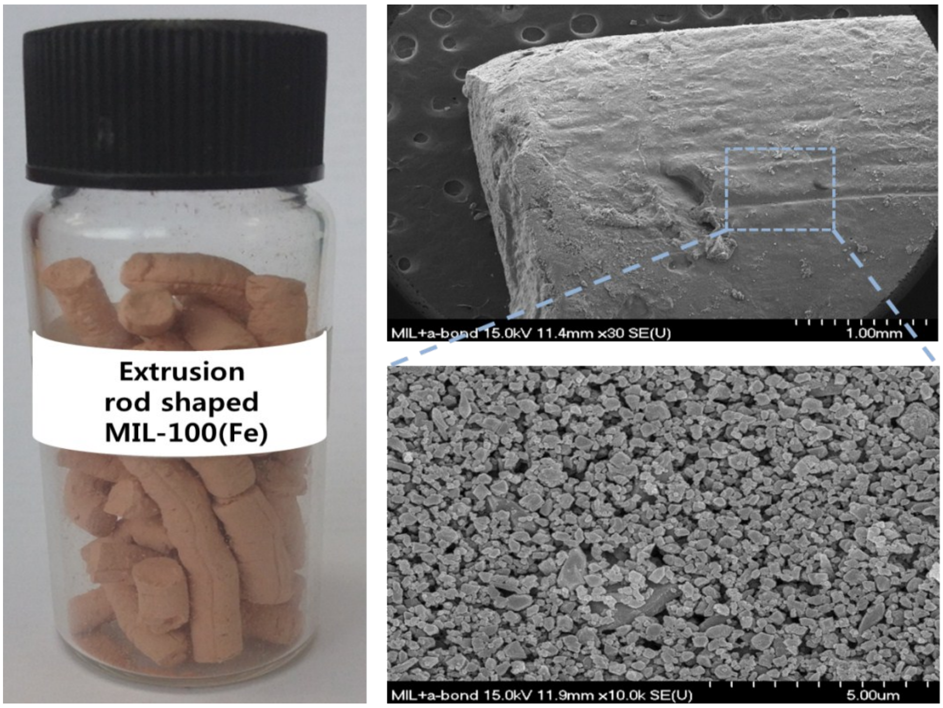

Figure S1: Photograph and SEM image of rod-shaped MIL-100(Fe) using MRA binder.

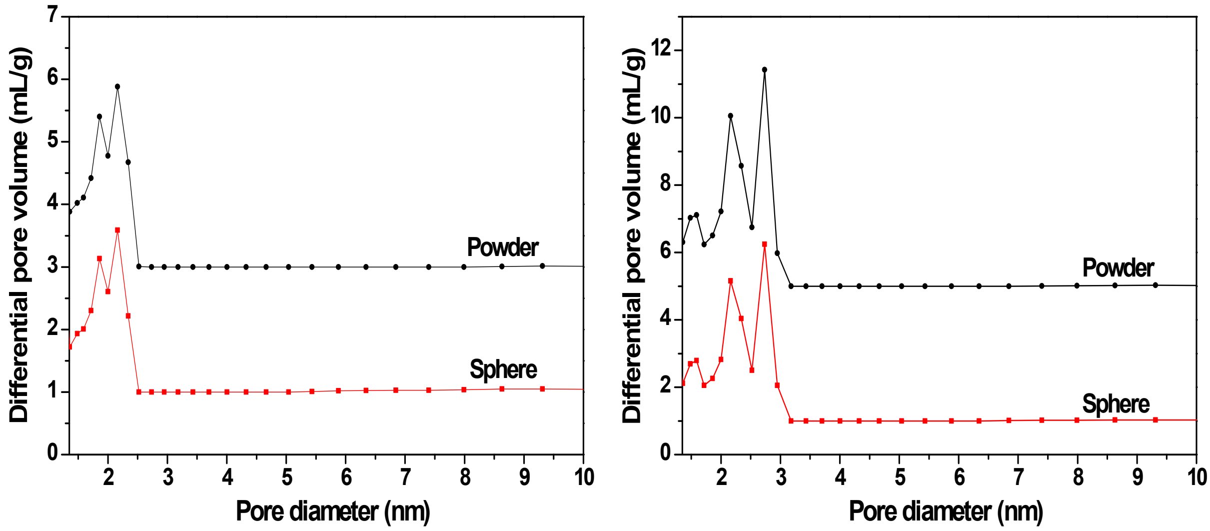

Figure S2: Pore-size distribution curves of powder and spheres of MIL-100(Fe) (left) and MIL-101(Cr) (right), calculated by density functional theory (DFT).

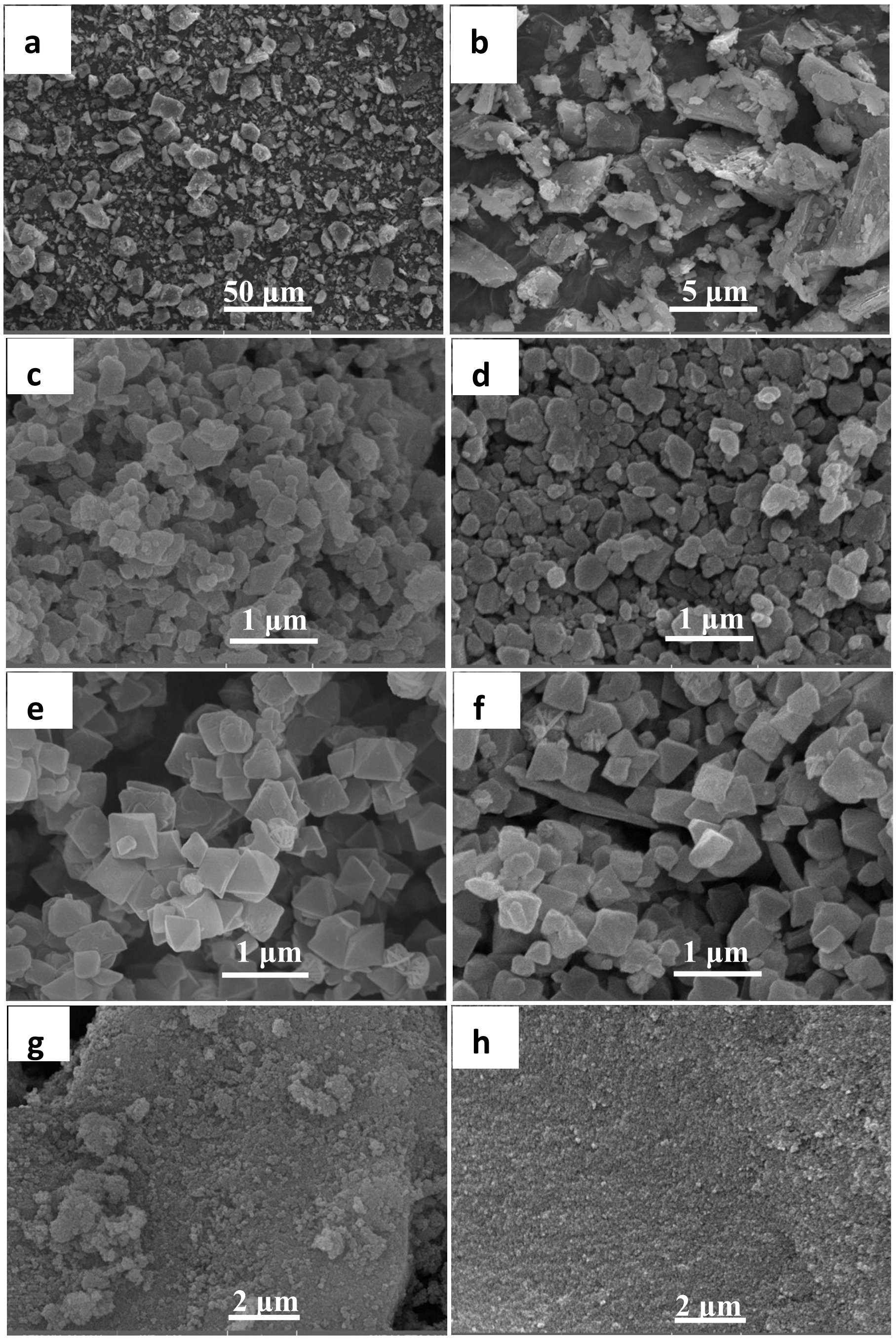

Figure S3: SEM images of MRA at a) low and b) high magnification and SEMimages of c) MIL-100(Fe) powder, d) MIL-100(Fe) spheres, e) MIL-101(Cr) powder, f) MIL-101(Cr) spheres, g) UiO-66(Zr) powder, and f) UiO-66(Zr) spheres.All shaped MOF bodies contained 5 wt% MRA binder.

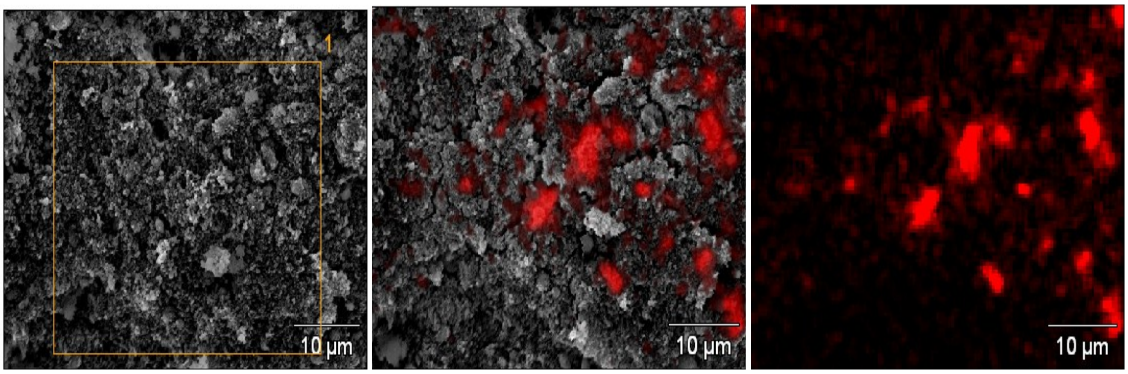

Figure S4: SEM-EDS elemental mapping of interior of spheres of MIL-101(Cr). Red areas indicate the presence of Al from 20 wt% MRA binder

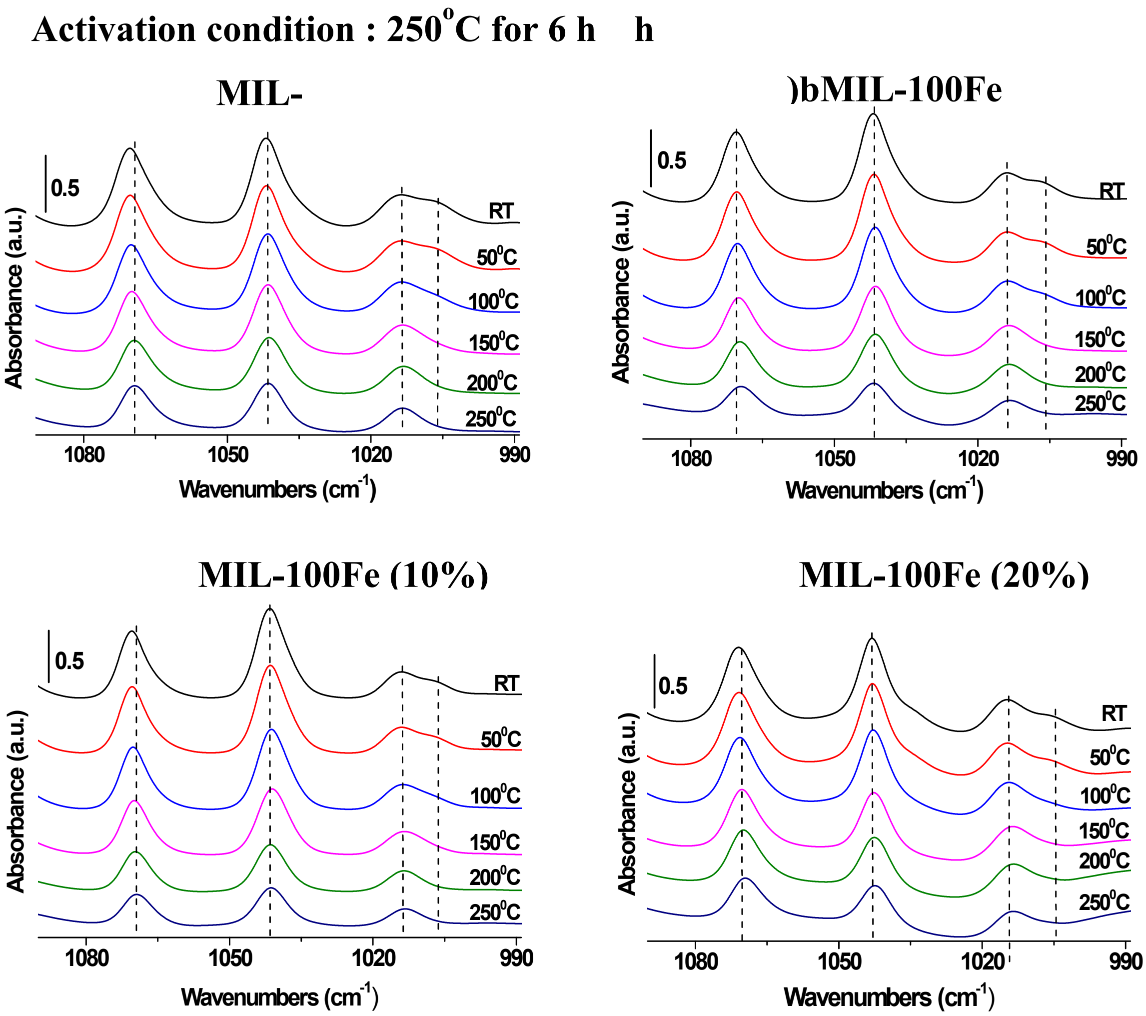

Figure S5: Temperature-dependent in-situ pyridine-IR spectra of MIL-100(Fe) powder and spheres with different MRA contents (indicated in parentheses).

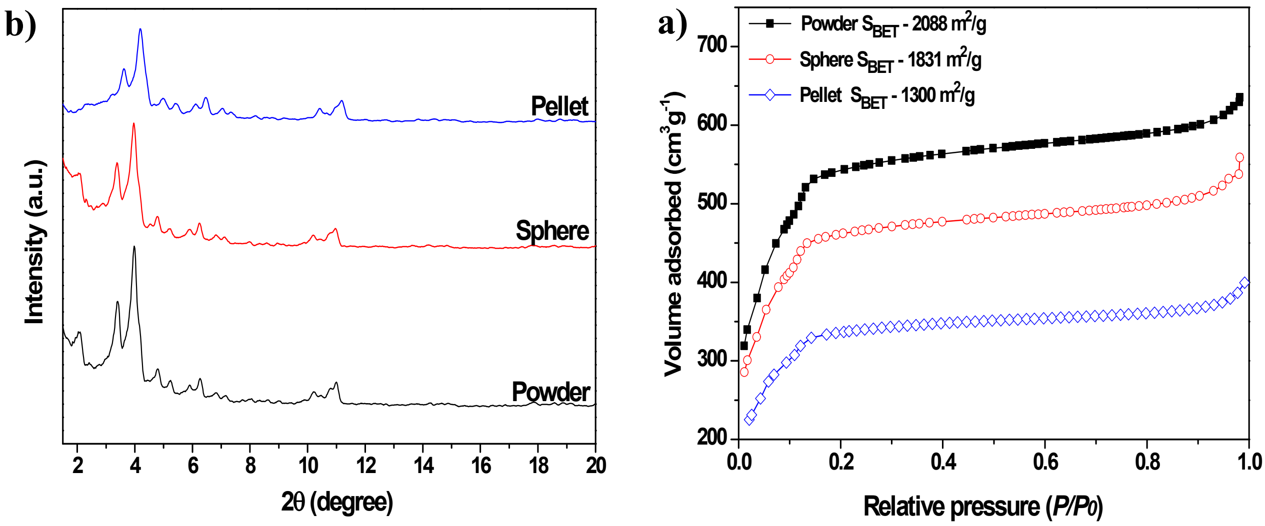

Figure S6: Comparison of powder, sphere, and pellet form of MIL-100(Fe): a) XRD patterns and b) N_2 adsorption isotherms at 77 K.

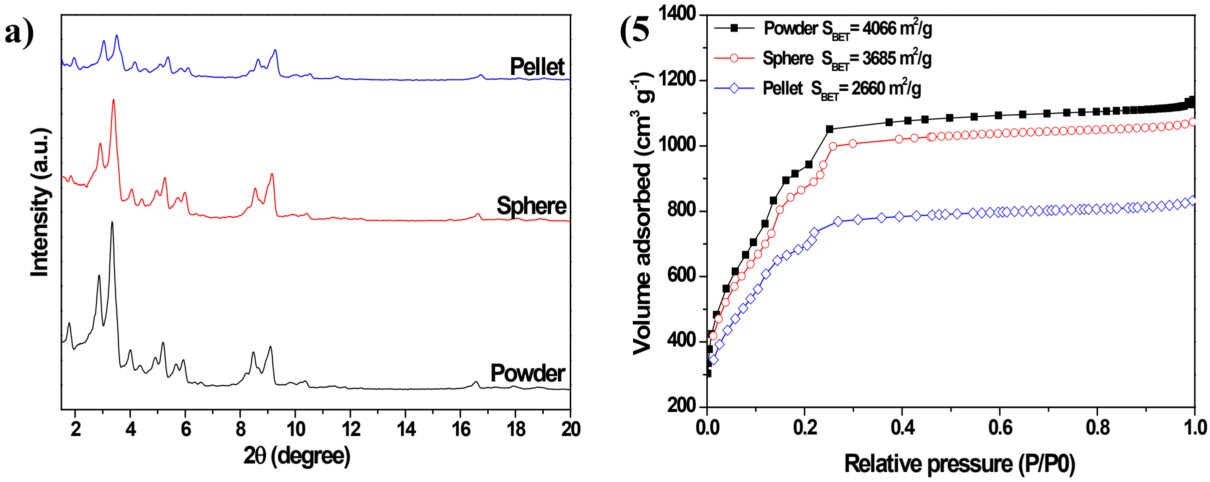

Figure S7: Comparison of powder, sphere, and pellet form of MIL-101(Cr): a) XRD patterns and b) N_2 adsorption isotherms at 77 K.

Table S1. Summary of porous properties of MOFs before and after shaping by various shaping methods.

MOF	Additives	Shaped body	BET Surface area (m^2/g)			Pore volume (cm^3/g)		Ref
			Powder	Shaped body	Loss (%)	Powder	Shaped body	
Zr-MOF (UiO-66)	10% Sucrose [a]	Spheres	1367	674	50.7	0.44	0.21	1
MIL-125 (Ti) $\_NH_2$	8% Polymer [a]	Granules	1250	930	25.6	0.5	0.36	2
SIM-1	NO [b]	Pellet	516	458-370	11.2-28.3	---	---	3
UiO-66[b]	1% graphite [b]	Pellet	1140	885	22.4	---	---	4
HKUST-1	37-67% polystyrene [c]	Microsph-eres	1430	757-32	47.1-97.8	---	---	5
UiO-66	23-33% Polyurethane [d]	Foam	1175	511-427	56.5-63.7	0.5	0.21-0.17	6
ZIF-8	20-50 Polysulfone [d]	Sphere	1023	761-128	25.6-87.5	---	---	7

[a] -granulation, [b]-pressing, [c]-spray drying and [d]-composite mixture shaping methods were used to shape the respective MOF.

References

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