

Electronic Supplemental Information

## Novel Co-based Metal-Organic Frameworks and Their Magnetic Properties Using Asymmetrically Binding 4-(4'-carboxyphenyl)-1,2,4-triazole.

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**Table S1** Selected atomic distances for **Co-MOF1** (Å).

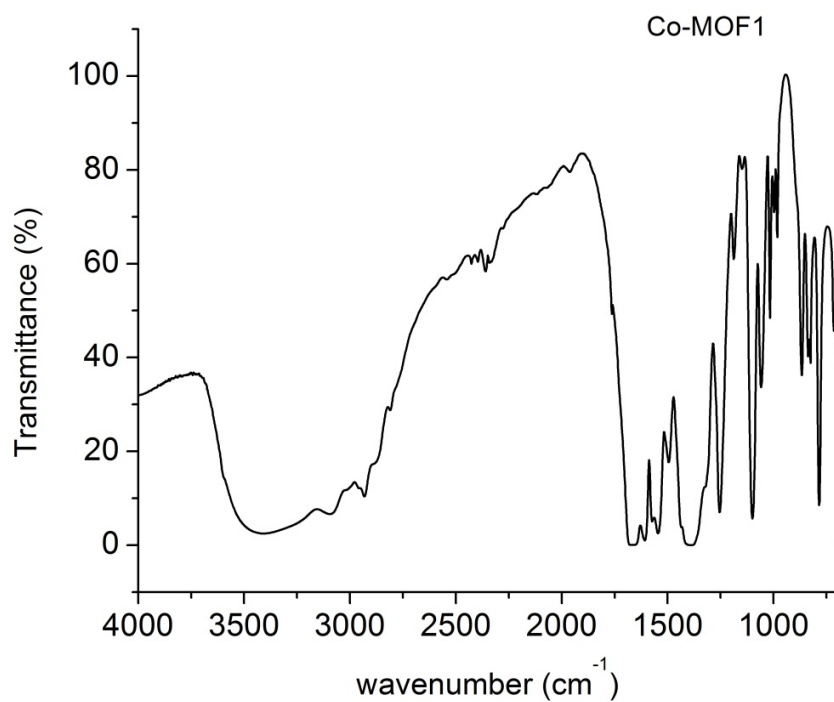
distances (Å)	
Co1-O2	2.0220(18)
Co-O3	2.074(7)
Co1-O1	2.099(5)
Co1-O1 <sup>i</sup>	2.099(5)
Co1-N1 <sup>ii</sup>	2.136(5)
Co1-N1 <sup>iii</sup>	2.136(5)

(i) x, 1+x-y, z; (ii) 1+x-y, x, -0.5+z; (iii) 1+x-y, 2-y, -0.5+z.

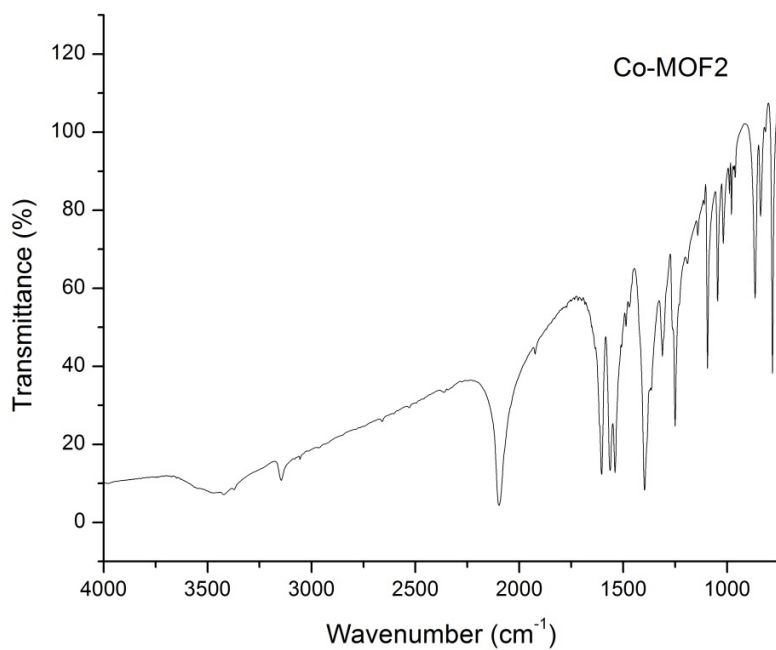
**Table S2** Selected atomic distances for **Co-MOF2** (Å).

distances (Å)	
Co1-O1 <sup>i</sup>	2.0601(7)
Co-1-O1 <sup>ii</sup>	2.0601(7)
Co1-N3	2.1458(6)
Co1-N3 <sup>iii</sup>	2.1458(6)
Co1-N1 <sup>iii</sup>	2.1523(8)
Co1-N1	2.1523(8)

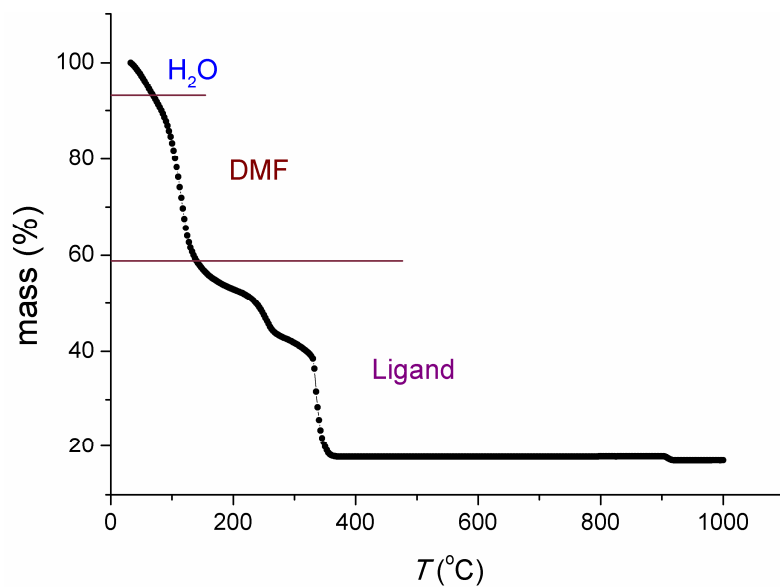
(i) 0.5-x, 0.5-y, -z; (ii) x, y, 1+z; (iii) 0.5-x, 0.5-y, 1-z; (iv) x, -y, z.



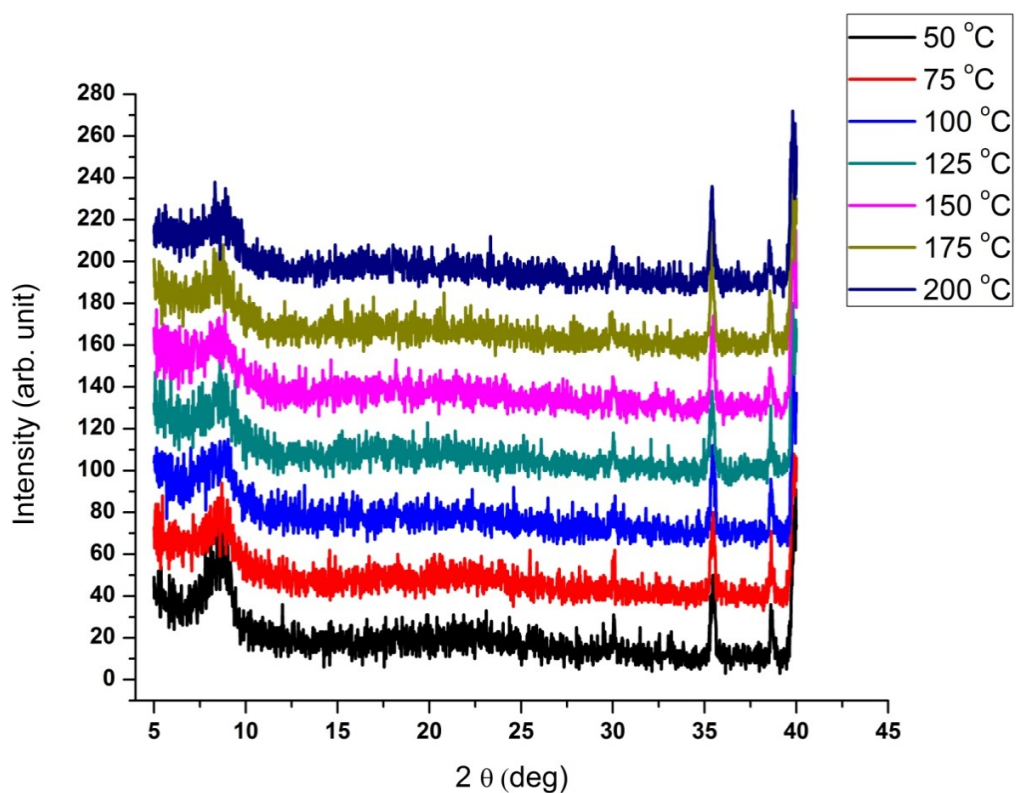
**Figure S1** IR data for **Co-MOF1**.



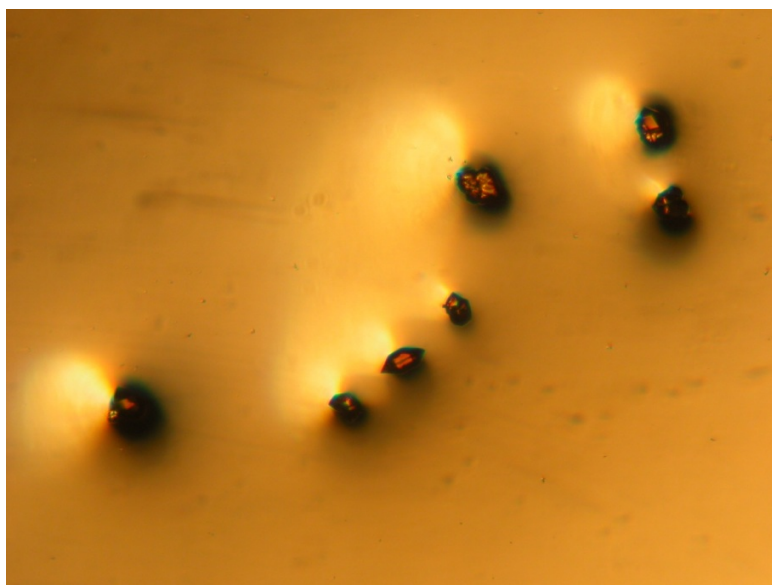
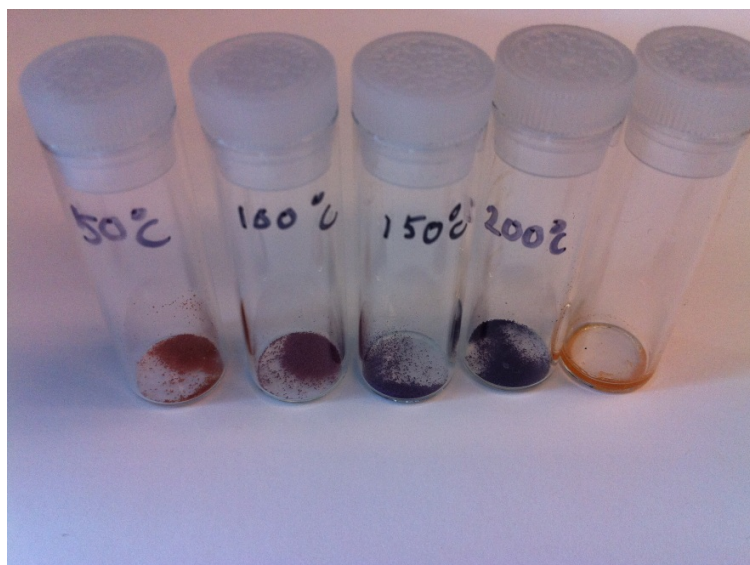
**Figure S2** IR data for **Co-MOF2**.



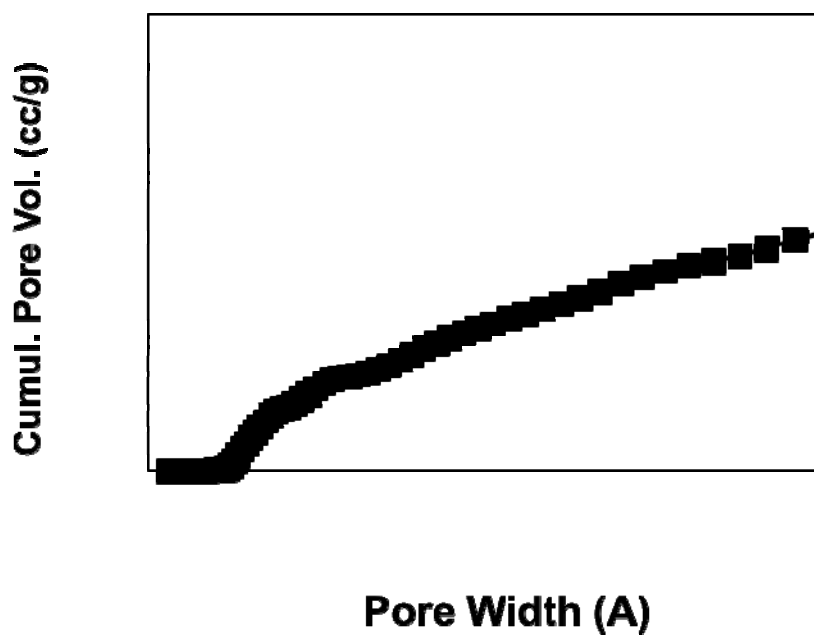
**Figure S3** Thermo-Gravimetric Analysis (TGA) of Co-MOF1.



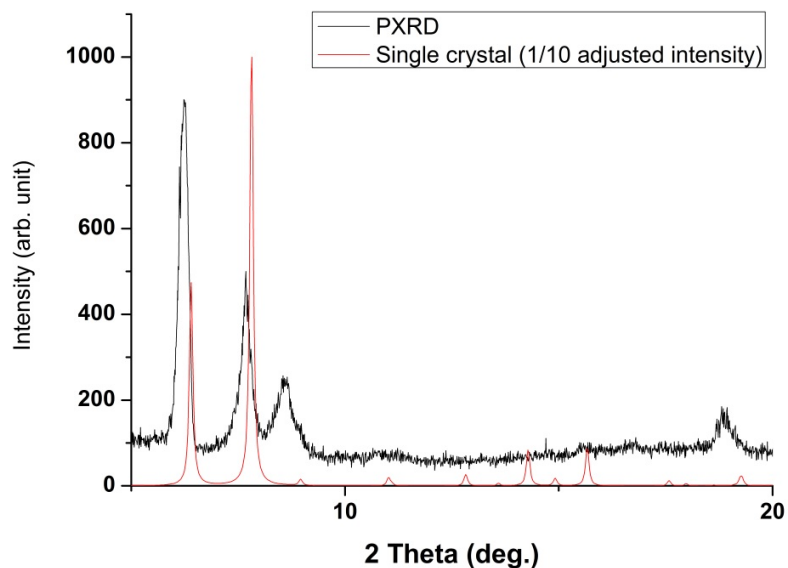
**Figure S4** X-ray powder diffraction patterns at various temperatures for Co-MOF1.



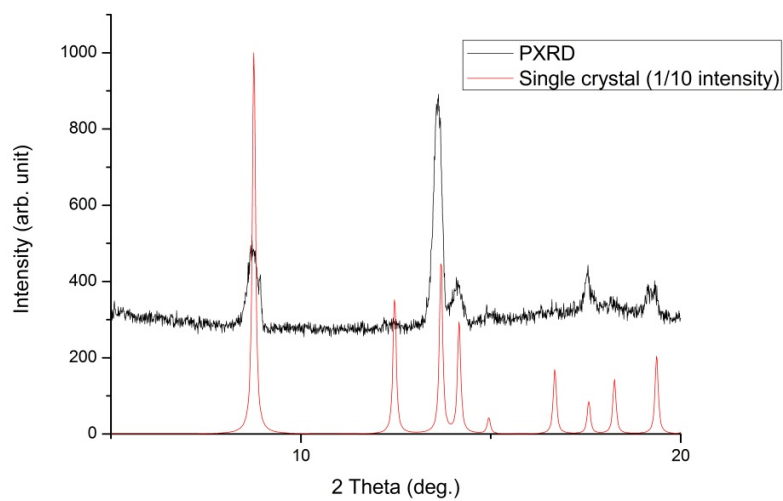
**Figure S5** (Top) Picture of the colour change of **Co-MOF1** crystals upon heating from 50 °C to 200 °C. The right vial represents the colour of the powder, which is the hydrated version of the powder heated at 200 °C. (Bottom) Crystals of **Co-MOF1** at room temperature.



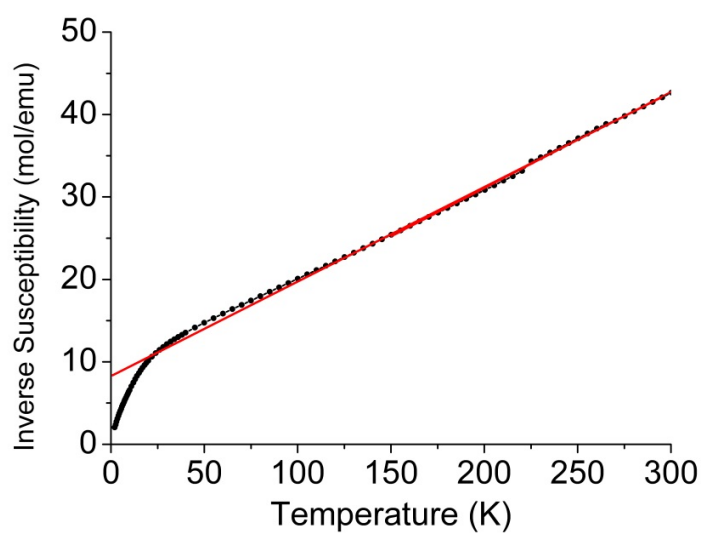
**Figure S6** Pore volume measurement for Co-MOF1.



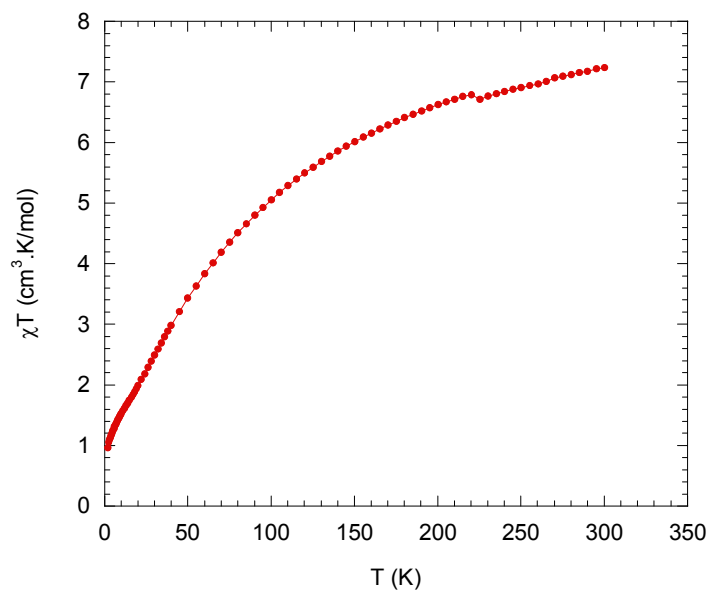
**Figure S7** X-ray powder diffraction pattern of Co-MOF1 (in black color). The red line is the simulated pattern generated from single crystal data of the sample.



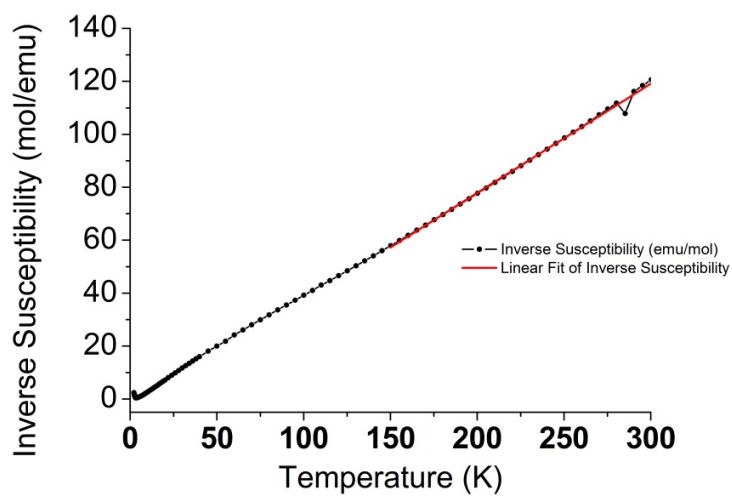
**Figure S8** X-ray powder pattern of **Co-MOF2** (in black color). The red line is the simulated pattern generated from single crystal data of the sample.



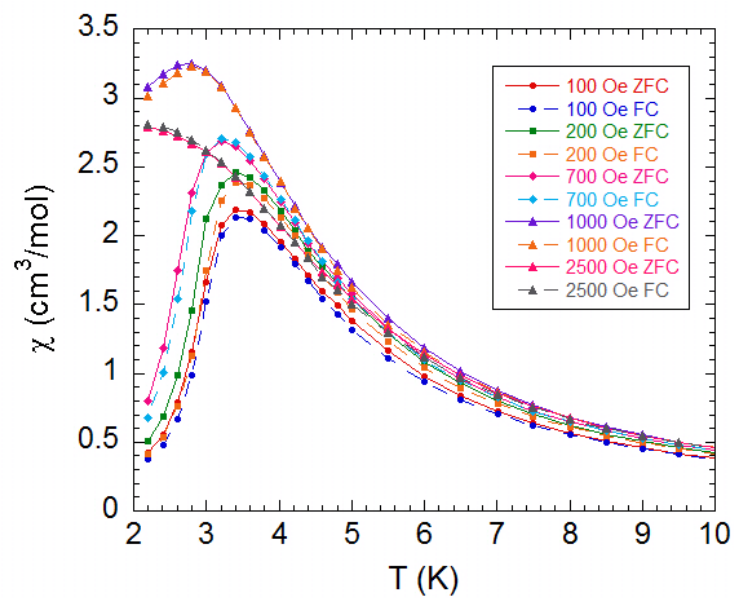
**Figure S9** The temperature dependence of the inverse susceptibility of **Co-MOF1** and its Curie-Weiss fitting (solid red line).



**Figure S10** Temperature dependence of  $\chi T$  product of **Co-MOF1**.



**Figure S11** The inverse susceptibility of **Co-MOF2** and its Curie-Weiss fitting.



**Figure S12** The temperature dependence of magnetic susceptibility for **Co-MOF2**.