Supporting Information for

Developing a magnetic metal organic framework of copper bearing a mixed azido/butane-1,4-dicarboxylate bridge: Magnetic and gas adsorption properties

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Table S1. Selected bond lengths [Å] and angles [º] for **MFUM-1(Cu)**.

Atom	**Atom**	**Length/Å**
Cu1	O1	1.9587(11)
Cu1	O1[1]	1.9587(11)
Cu1	N1	2.0154(11)
Cu1	N1[1]	2.0154(11)
Cu1	O2	2.4443(13)
O1	C1	1.2634(15)
N1	N2	1.211(3)
N2	N3	1.139(3)
C1	C2	1.514(3)
C2	C3	1.534(3)
C3	C3[2]	1.523(4)

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[1]1/2-x,3/2-y,2-z; [2]1-x,2-y,1-z

Atom	**Atom**	**Atom**	**Angle/°**
O1	Cu1	O1[1]	180.0
O1[1]	Cu1	N1	90.45(6)
O1	Cu1	N1[1]	90.45(6)
O1	Cu1	N1	89.55(6)
O1[1]	Cu1	N1[1]	89.55(6)
O1[1]	Cu1	O2	91.54(5)
O1	Cu1	O2	88.46(5)
N1	Cu1	N1[1]	180.0
N1[1]	Cu1	O2	81.02(5)
N1	Cu1	O2	98.98(5)
C1	O1	Cu1	131.60(12)
Cu1	N1	Cu1[2]	106.90(8)
N2	N1	Cu1[2]	120.76(7)
N2	N1	Cu1	120.76(7)
N3	N2	N1	178.7(2)
O1[3]	C1	O1	125.9(2)
O1	C1	C2	117.05(10)
O1[3]	C1	C2	117.04(10)
C1	C2	C3	109.59(19)
C3[4]	C3	C2	111.1(2)

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[1]1/2-x,3/2-y,2-z; [2]1/2-x,-1/2+y,2-z; [3]+x,2-y,+z; [4]1-x,2-y,1-z

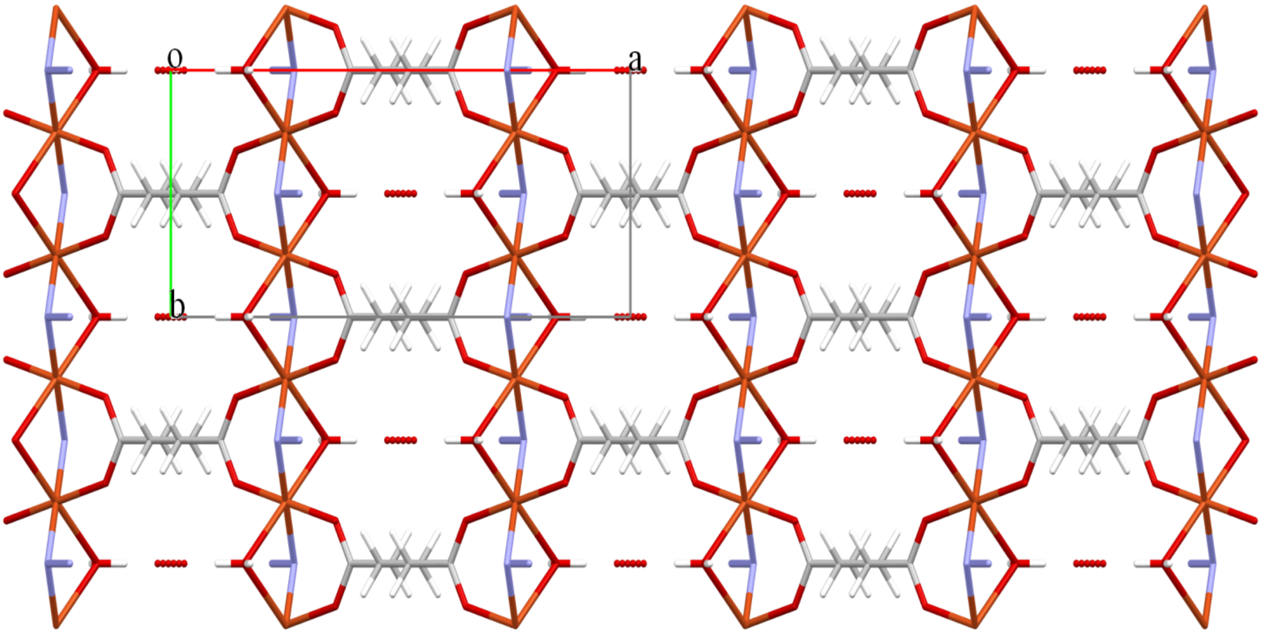


Figure S1. Crystal packing of **MFUM-1(Cu)**showing the 2D layer formed by *bis*(bidentate) but-1,4-dc ligandalong the *ab*-plane.

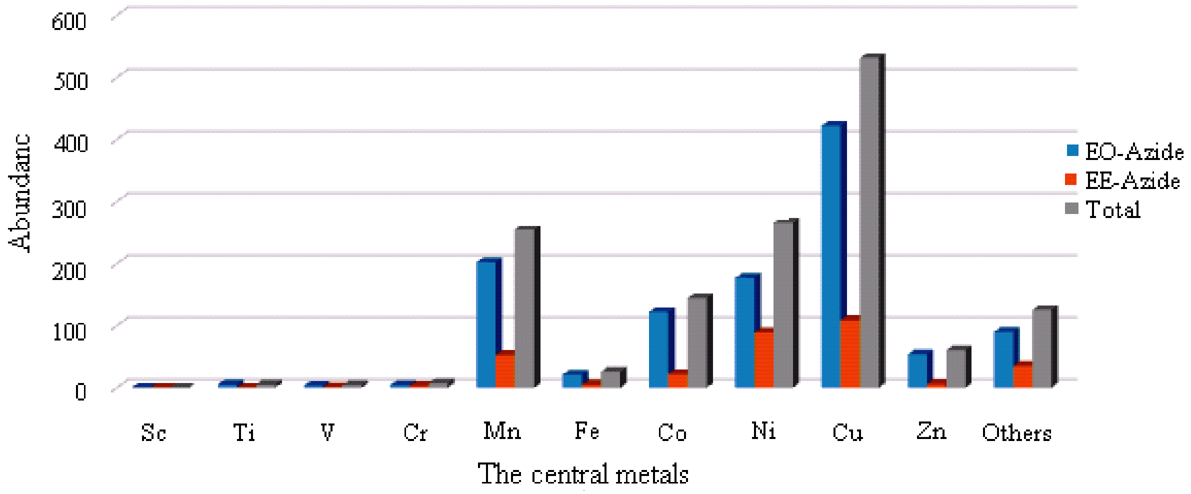


Figure S2. Abundance of reported coordination compounds containing EO and EE–bridging azido ligand with various metal centres.

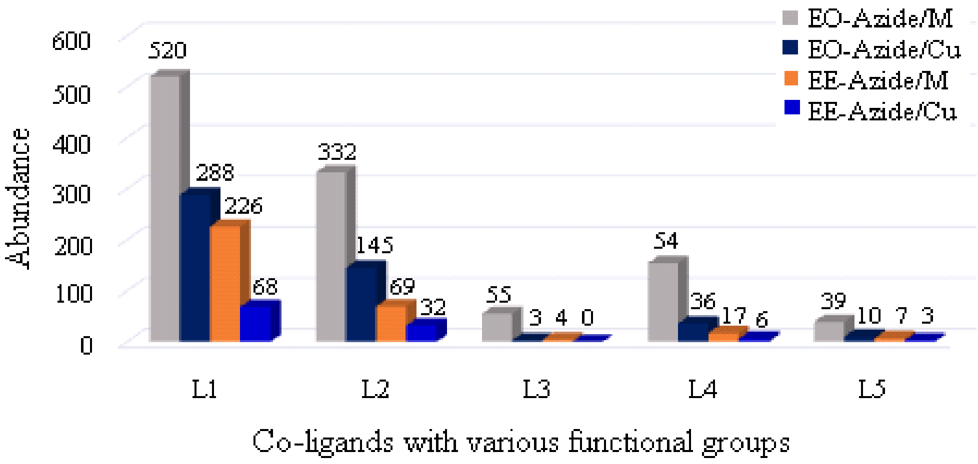


Figure S3. Abundance of complexes containing bridging azido with various co-ligands: L1 = neutral N donor, L2 = NO_{OH}, L3 = alcoholic, L4 = monocarboxylate, and L5 = dicarboxylate ligands.

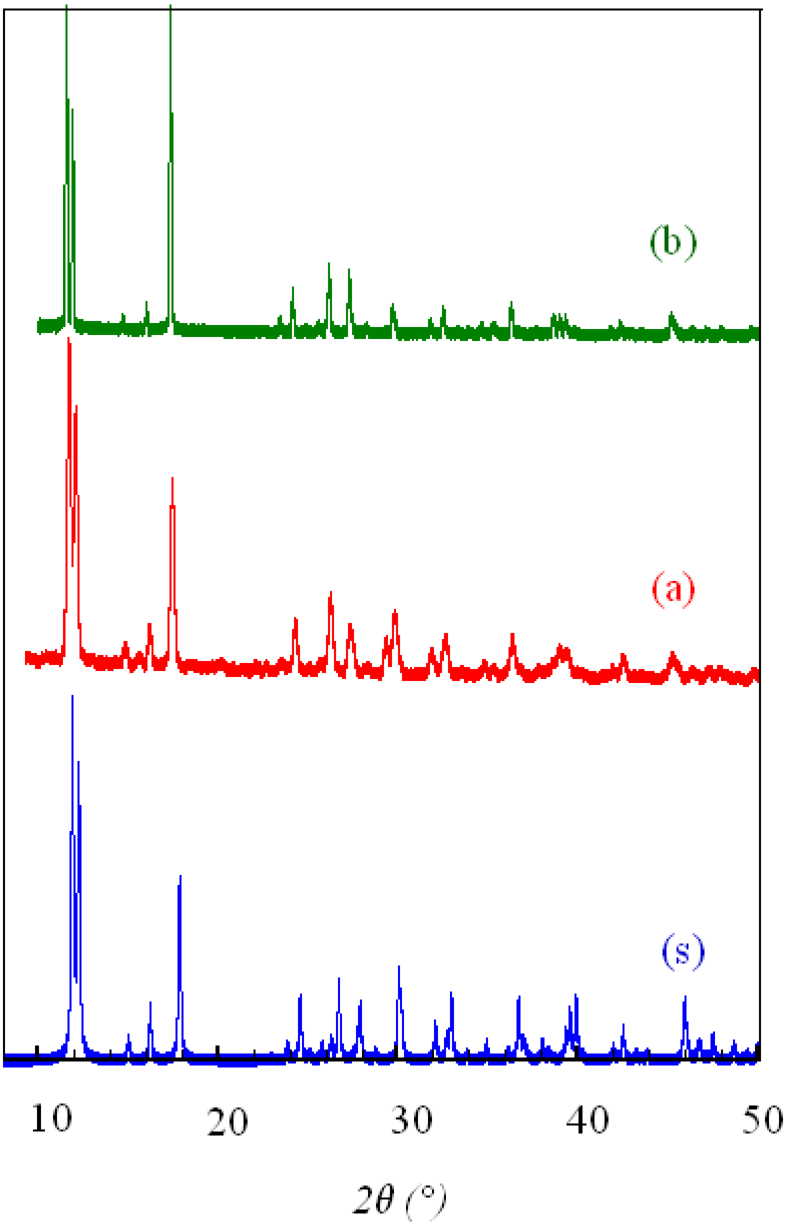


Figure S4. Powder X-ray diffraction patterns for samples A (a) and B (b), andpredicted powder pattern of **MFUM-1(Cu)** based upon the crystal structure (s).

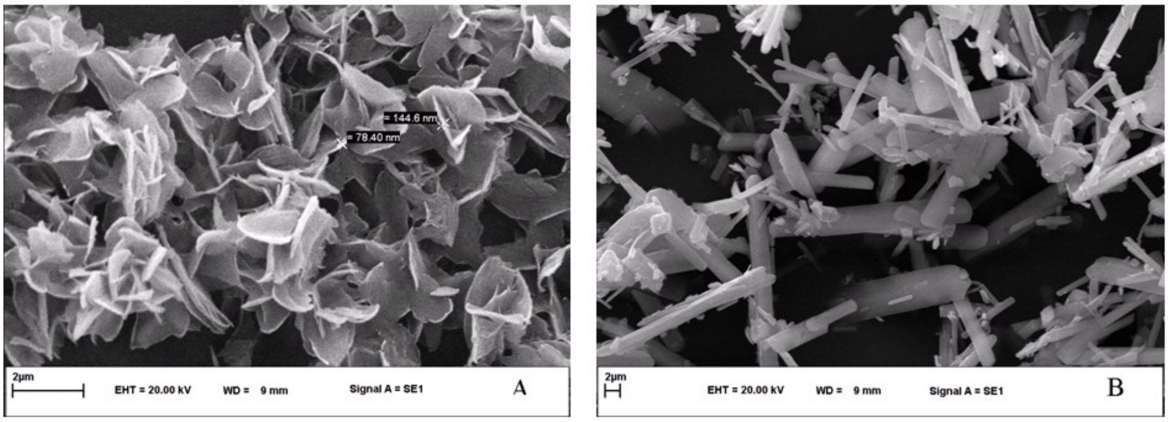


Figure S5. SEM images of samples A and B synthesized using ultrasonic method for various solvents (A) pure water and (B) H_2O/EtOH.

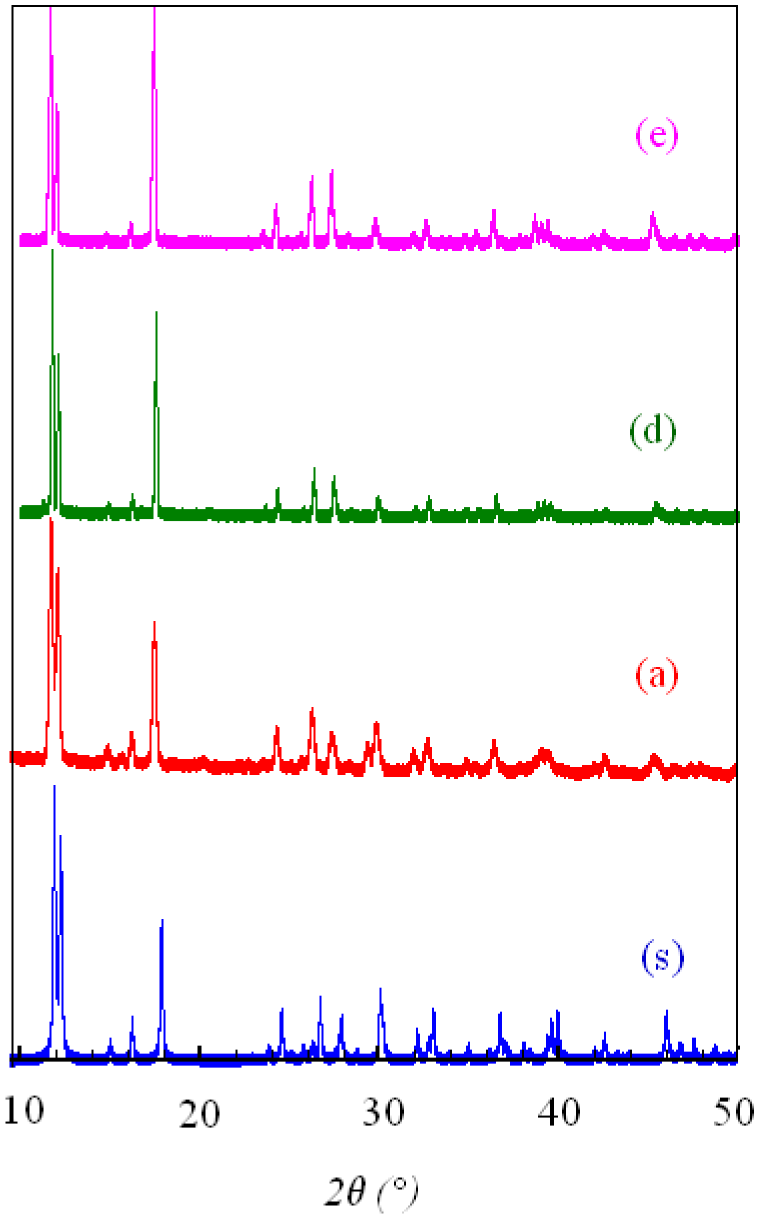


Figure S6. Powder X-ray diffraction patterns for samples A (a), D (d) and E (e), and predicted powder pattern of **MFUM-1(Cu)** based upon the crystal structure (s).

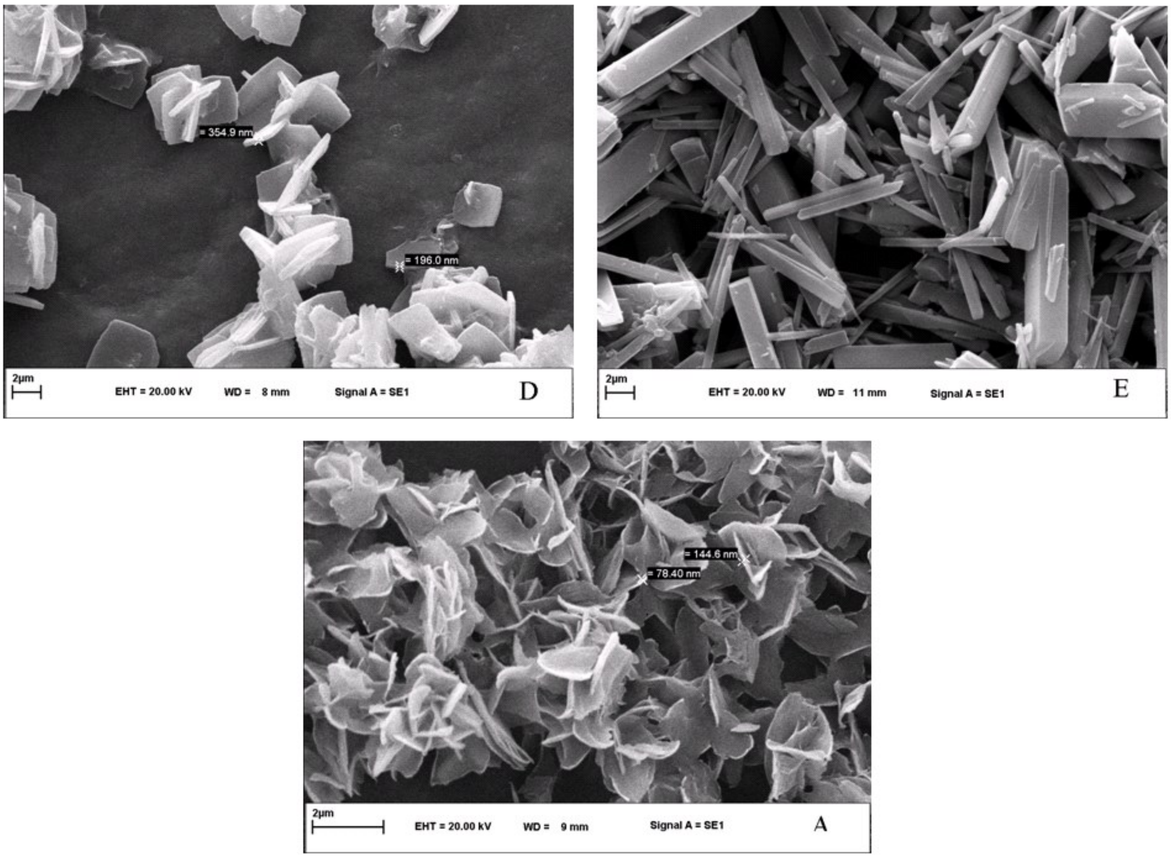


Figure S7. SEM images of samples A, D, and E synthesized using ultrasonic method in various concentration of initial precursor; [L^{2-}] = (A) 0.005 M, (D) 0.025 M, (E) and 0.050 M.

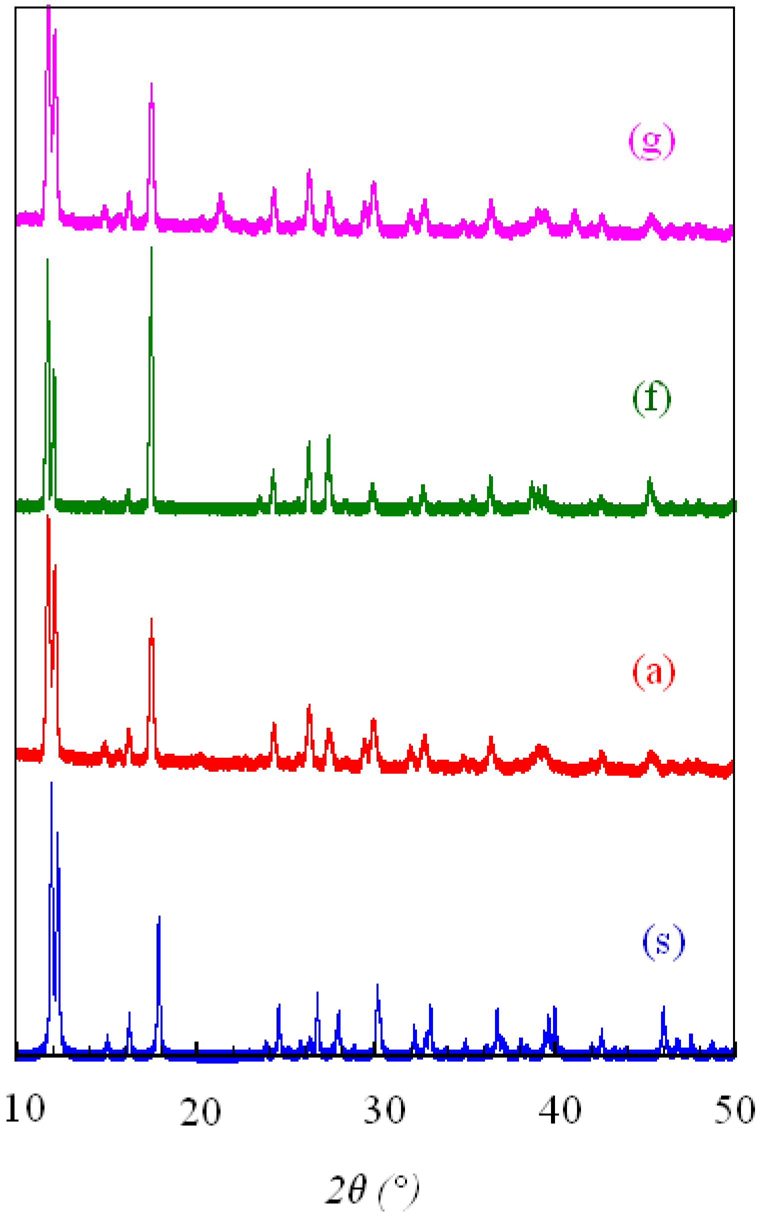


Figure S8. Powder X-ray diffraction patterns for samples A (a), F (f) and G (g), and predicted powder pattern of **MFUM-1(Cu)** based upon the crystal structure (s).

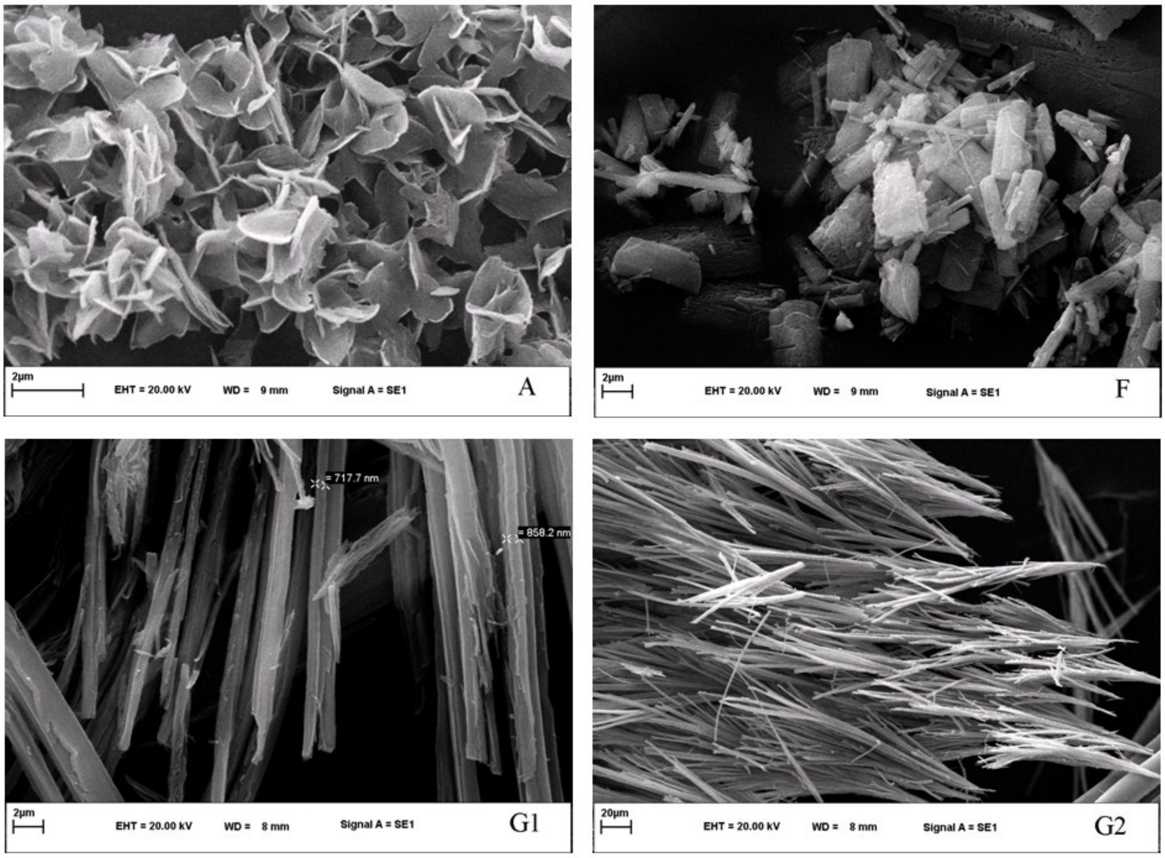


Figure S9. SEM images of samples A, F, and G synthesized using ultrasonic method for various reaction times: (A) 40, (F) 20, and (G1, G2) 60 min.

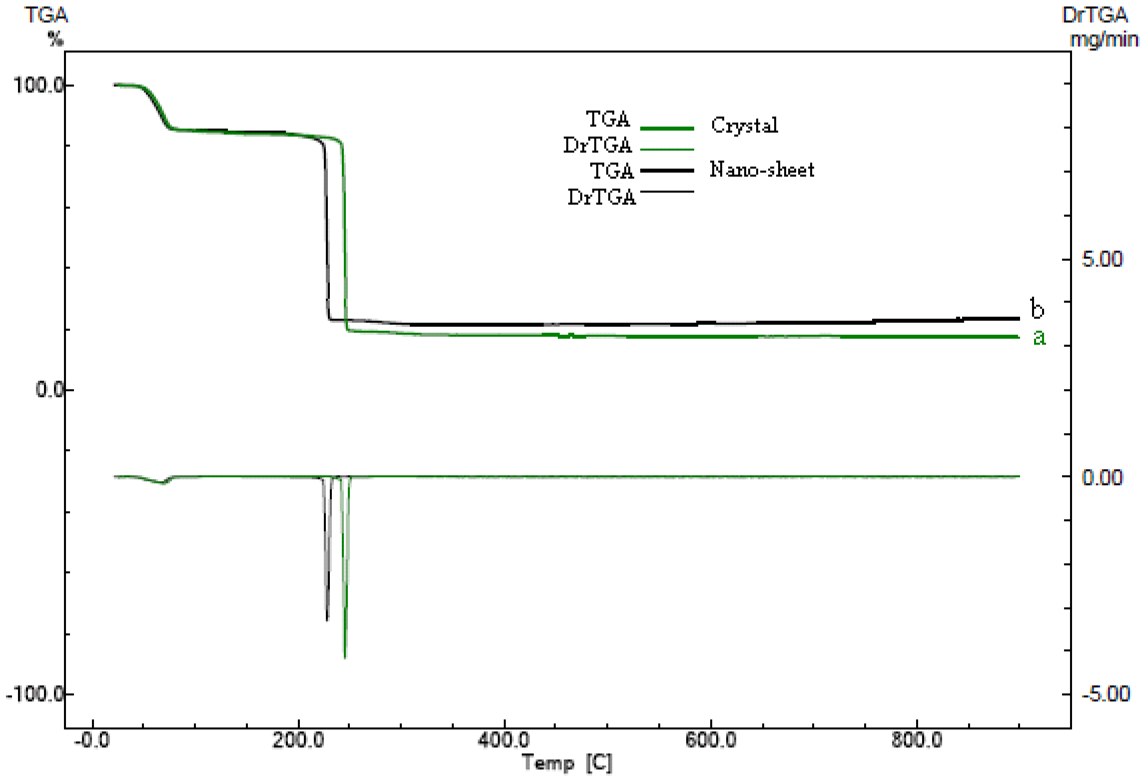


Figure S10. Thermal behavior of **MFUM-1(Cu)** as bulk and nano-sheets.

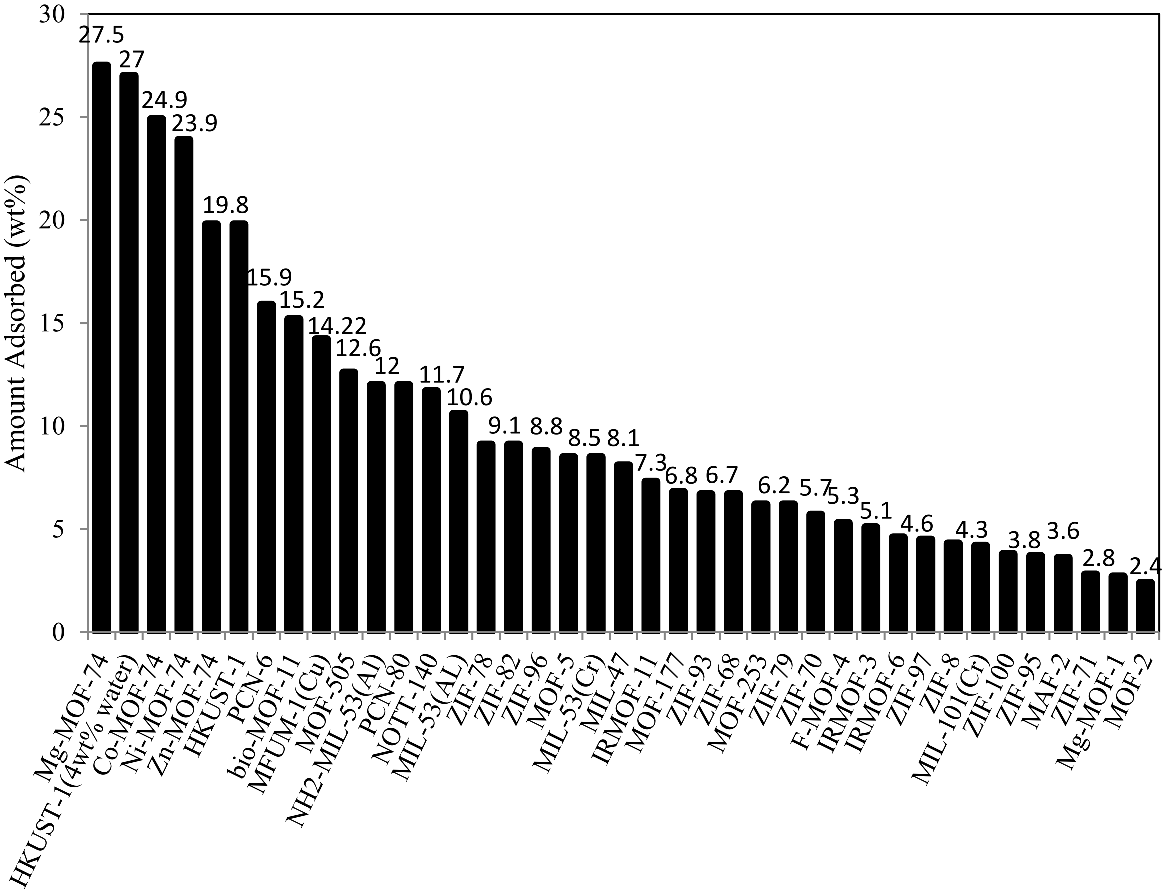
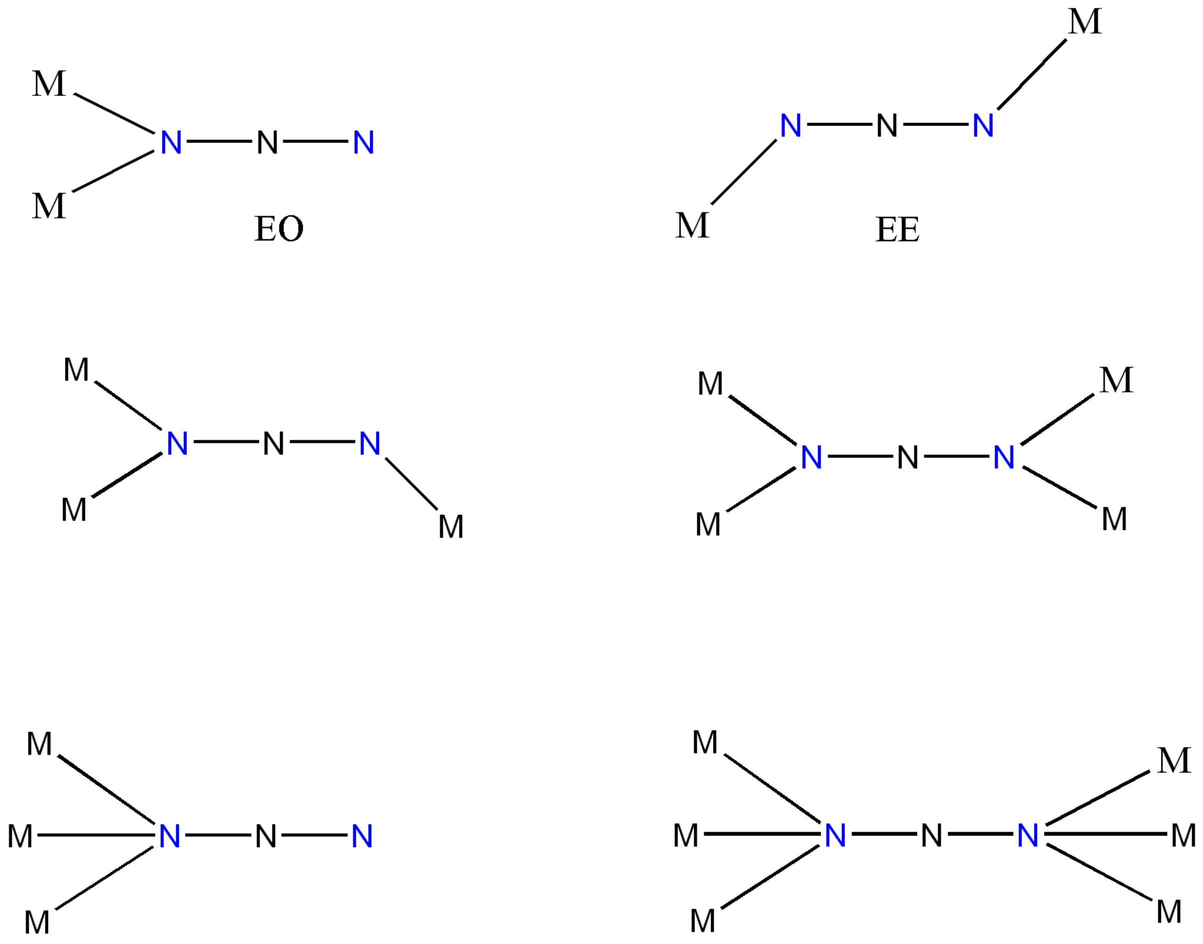


Figure S11. CO_2 Adsorption capacity of **MFUM-1(Cu)** in comparison with some MOFs at 298K and 1 bar.



Scheme S1. Coordination modes of azido bridged ligand.