

# Supporting Information

## A Series of Variable Coordination Polymers Based on Flexible Aromatic Carboxylates

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**Table S1.** Selected Bond Distances (Å) and Angles (°) for complexes **1-6**

Compound 1			
Ag(1)-N(3)#1	2.223(3)	N(3)#1-Ag(1)-N(2)	132.62(11)
Ag(1)-N(2)	2.316(3)	N(3)#1-Ag(1)-O(2)#2	125.36(11)
Ag(1)-O(2)#2	2.373(3)	N(2)-Ag(1)-O(2)#2	90.19(11)
Ag(1)-O(1)#3	2.440(3)	N(3)#1-Ag(1)-O(1)#3	107.99(10)
N(3)-Ag(1)#4	2.223(3)	N(2)-Ag(1)-O(1)#3	91.89(10)
O(1)-Ag(1)#5	2.440(3)	O(2)#2-Ag(1)-O(1)#3	101.08(9)
O(2)-Ag(1)#6	2.373(3)		

Symmetry transformations used to generate equivalent atoms: #1  $x+1,y,z$ ; #2  $x,-y+3/2,z-1/2$ ; #3  $-x+1,y-1/2,-z+1/2$ ; #4  $x-1,y,z$   
#5  $-x+1,y+1/2,-z+1/2$ ; #6  $x,-y+3/2,z+1/2$

Compound 2			
Cu(1)-N(1)#1	1.997(3)	N(1)-Cu(1)-N(1)#1	180.00(3)
Cu(1)-N(1)	1.997(3)	O(1)#2-Cu(1)-N(1)#1	88.28(10)
Cu(1)-O(1)#2	1.970(2)	O(1)#3-Cu(1)-N(1)#1	91.72(10)
Cu(1)-O(1)#3	1.970(2)	O(1)#3-Cu(1)-N(1)	88.28(10)
O(1) - Cu(1)#4	1.970(2)	O(1)#2-Cu(1)-N(1)	91.72(10)
		O(1)#2-Cu(1)-O(1)#3	180.00(19)

Symmetry transformations used to generate equivalent atoms: #1  $-X,-Y,-Z$ ; 2#  $-1/2+X,-1/2-Y,-1/2+Z$ ; 3#  $1/2-X, 1/2+Y, 1/2-Z$ ;  
4#  $1/2-X,-1/2+Y,1/2-Z$

Compound 3			
Eu(1)-O(1)	2.330(4)	O(2)#3-Eu(1)-O(5)#1	75.40(13)
Eu(1)-O(1)#1	2.330(4)	O(1)-Eu(1)-O(5)	75.81(14)
Eu(1)-O(2)#2	2.368(4)	O(1)#1-Eu(1)-O(5)	127.42(14)
Eu(1)-O(2)#3	2.368(4)	O(2)#2-Eu(1)-O(5)	75.40(13)
Eu(1)-O(5)#1	2.468(4)	O(2)#3-Eu(1)-O(5)	80.10(13)
Eu(1)-O(5)	2.468(4)	O(5)#1-Eu(1)-O(5)	53.03(19)
Eu(1)-N(3)#4	2.610(5)	O(1)-Eu(1)-N(3)#4	86.16(14)
Eu(1)-N(3)#5	2.610(5)	O(1)#1-Eu(1)-N(3)#4	74.56(14)
O(2)-Eu(1)#3	2.369(4)	O(2)#2-Eu(1)-N(3)#4	136.12(14)
N(3)-Eu(1)#5	2.610(5)	O(2)#3-Eu(1)-N(3)#4	70.67(14)
O(1)-Eu(1)-O(1)#1	156.63(19)	O(5)#1-Eu(1)-N(3)#4	129.55(14)
O(1)-Eu(1)-O(2)#2	99.89(13)	O(5)-Eu(1)-N(3)#4	146.69(14)
O(1)#1-Eu(1)-O(2)#2	85.66(13)	O(1)-Eu(1)-N(3)#5	74.56(14)
O(1)-Eu(1)-O(2)#3	85.66(13)	O(1)#1-Eu(1)-N(3)#5	86.16(14)
O(1)#1-Eu(1)-O(2)#3	99.89(13)	O(2)#2-Eu(1)-N(3)#5	70.67(14)
O(2)#2-Eu(1)-O(2)#3	152.6(2)	O(2)#3-Eu(1)-N(3)#5	136.12(14)
O(1)-Eu(1)-O(5)#1	127.42(14)	O(5)#1-Eu(1)-N(3)#5	146.69(14)
O(1)#1-Eu(1)-O(5)#1	75.81(14)	O(5)-Eu(1)-N(3)#5	129.55(14)
O(2)#2-Eu(1)-O(5)#1	80.10(13)	N(3)#4-Eu(1)-N(3)#5	69.28(19)

Symmetry transformations used to generate equivalent atoms: #1  $-x,y,-z-1/2$ ; #2  $x,-y,z-1/2$ ; #3  $-x,-y,-z$ ; #4  $x-1/2,-y-1/2,z-1/2$ ;  
#5  $-x+1/2,-y-1/2,-z$

Compound 4			
Ag(1)-N(12)	2.180(3)	N(12)-Ag(1)-N(1)	150.36(12)
Ag(1)-N(1)	2.181(3)	O(2)-Ag(1)-N(1)	91.60(13)
Ag(1)-O(2)	2.659(2)	N(12)-Ag(1)-O(2)	113.60(14)

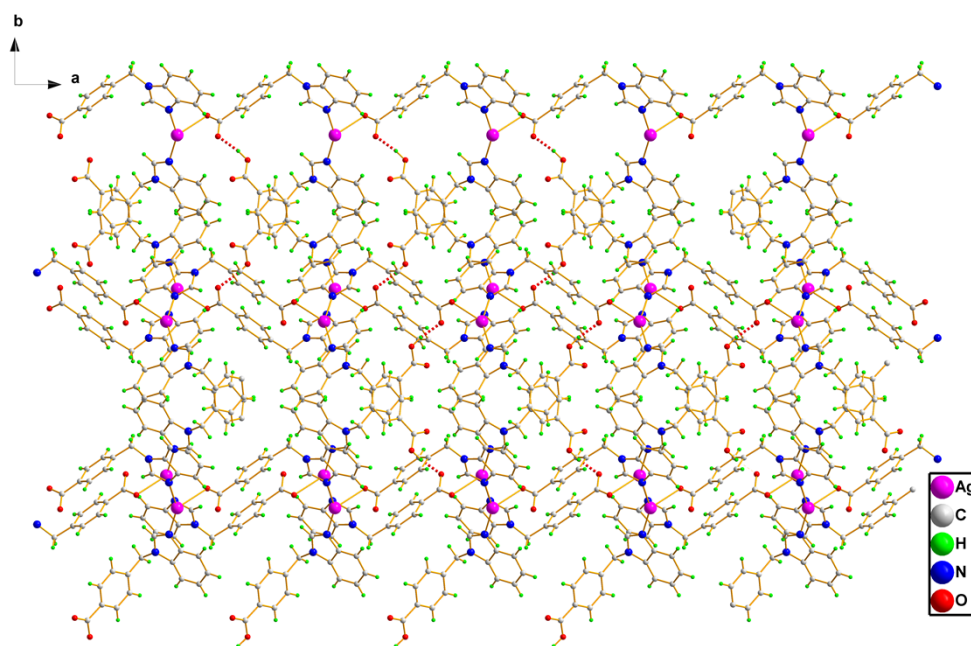
Symmetry transformations used to generate equivalent atoms: #1  $x+1,y,z$ ; #2  $x,-y+3/2,z-1/2$ ; #3  $-x+1,y-1/2,-z+1/2$

Compound 5			
Cu(1)-O(1)#1	1.9710(14)	O(1)#1-Cu(1)-O(1)#2	180.0
Cu(1)-O(1)#2	1.9710(14)	O(1)#1-Cu(1)-N(1)	91.44(6)
Cu(1)-N(1)	1.9769(17)	O(1)#2-Cu(1)-N(1)	88.56(6)
Cu(1)-N(1)#3	1.9770(17)	O(1)#1-Cu(1)-N(1)#3	88.56(6)
O(1)-Cu(1)#4	1.9710(14)	O(1)#2-Cu(1)-N(1)#3	91.44(6)
		N(1)-Cu(1)-N(1)#3	180.00(11)

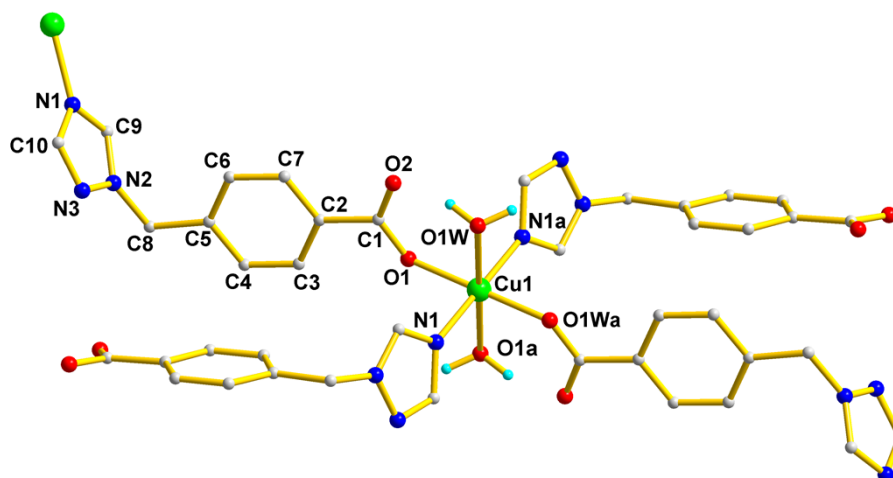
Symmetry transformations used to generate equivalent atoms: #1  $x-1/2,-y+3/2,z+1/2$ ; #2  $-x+1/2,y+1/2,-z+3/2$ ; #3  $-x,-y+2,-z+2$ ;  
#4  $-x+1/2,y-1/2,-z+3/2$

Compound 6			
N(4)-Eu(2)	2.604(5)	O(5)-Eu(2)-O(2)#4	79.82(18)
O(1)-Eu(2)	2.434(5)	O(3)#5-Eu(2)-O(2)#4	92.75(16)
O(2)-Eu(2)#1	2.413(5)	O(4)#3-Eu(2)-O(1)	87.60(18)
O(2)-Eu(2)	2.644(5)	O(6)#1-Eu(2)-O(1)	131.22(17)
O(3)-Eu(2)#2	2.378(4)	O(5)-Eu(2)-O(1)	74.6(2)
O(4)-Eu(2)#3	2.349(5)	O(3)#5-Eu(2)-O(1)	86.24(17)
O(5)-Eu(2)	2.351(5)	O(2)#4-Eu(2)-O(1)	153.55(17)
O(6)-Eu(2)#4	2.348(4)	O(4)#3-Eu(2)-N(4)	71.51(18)
Eu(2)-O(4)#3	2.348(5)	O(6)#1-Eu(2)-N(4)	131.20(17)
Eu(2)-O(6)#1	2.348(4)	O(5)-Eu(2)-N(4)	70.91(18)
Eu(2)-O(3)#5	2.378(4)	O(3)#5-Eu(2)-N(4)	143.38(19)
Eu(2)-O(2)#4	2.413(5)	O(2)#4-Eu(2)-N(4)	75.33(17)
O(4)#3-Eu(2)-O(6)#1	83.60(17)	O(1)-Eu(2)-N(4)	89.84(17)
O(4)#3-Eu(2)-O(5)	138.17(17)	O(4)#3-Eu(2)-O(2)	78.72(15)
O(6)#1-Eu(2)-O(5)	136.20(19)	O(6)#1-Eu(2)-O(2)	80.05(16)
O(4)#3-Eu(2)-O(3)#5	144.42(18)	O(5)-Eu(2)-O(2)	114.59(16)
O(6)#1-Eu(2)-O(3)#5	74.53(18)	O(3)#5-Eu(2)-O(2)	70.20(15)
O(5)-Eu(2)-O(3)#5	72.95(18)	O(2)#4-Eu(2)-O(2)	151.46(3)
O(4)#3-Eu(2)-O(2)#4	107.58(17)	O(1)-Eu(2)-O(2)	51.18(15)
O(6)#1-Eu(2)-O(2)#4	73.25(17)	N(4)-Eu(2)-O(2)	131.74(16)

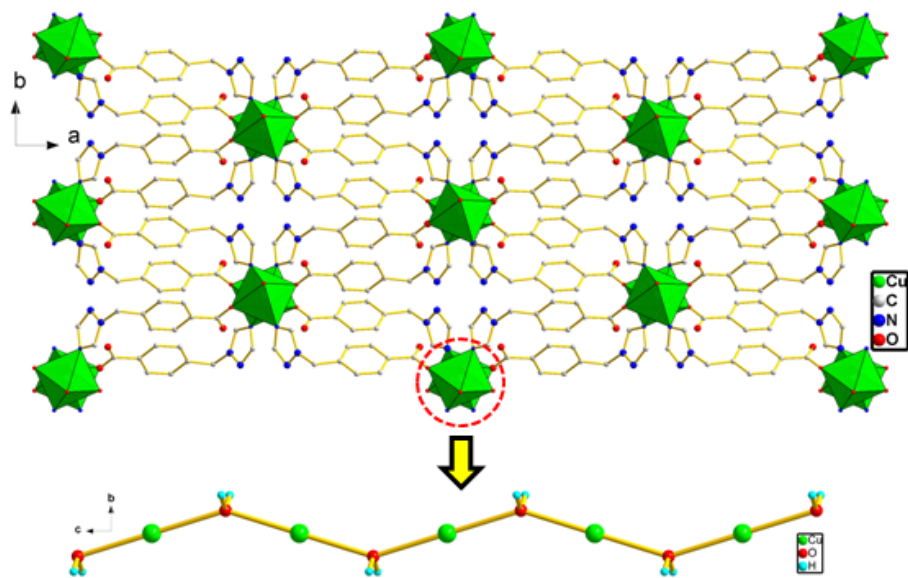
Symmetry transformations used to generate equivalent atoms: #1  $-x+1,y-1/2,-z+3/2$ ; #2  $x,-y+1/2,z+1/2$ ; #3  $-x+1,-y,-z+2$ ;  
#4  $-x+1,y+1/2,-z+3/2$ ; #5  $x,-y+1/2,z-1/2$



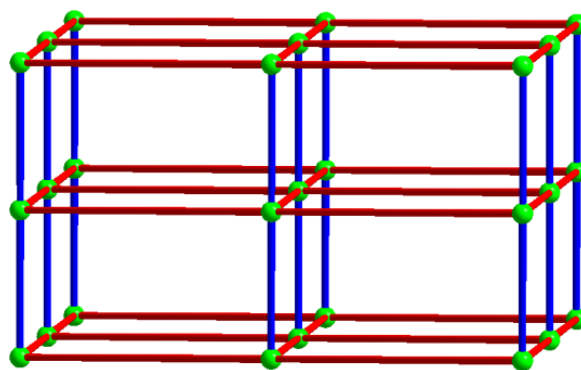
**Figure S1.** 3-D supramolecular network in *ab* plane assembled by hydrogen bonding O-H...O interactions between two adjacent chains in complex **4**.



**Figure S2.** The coordination environment of  $\text{Cu}^{2+}$  ion in complex **2**. All the H atoms are omitted for clarity



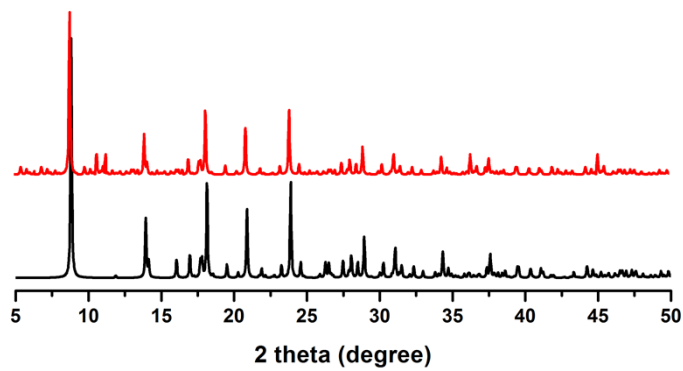
**Figure S3.** The inorganic zigzag chains  $-\text{Cu}-\text{O}-\text{Cu}-\text{O}-$  and the 3D framework structure for complex 2.



**Figure S4.** View of the 3D pcu topology in compound 2.

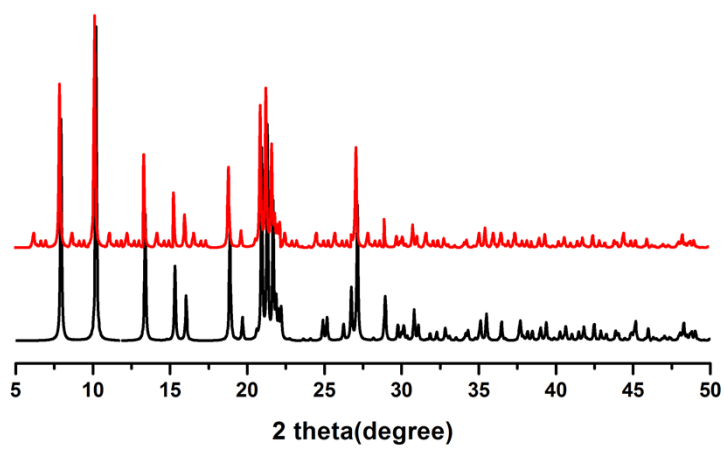
**Figure S5.** The powder X-ray diffraction (PXRD) pattern of **1-6** (Red: Experimental; Black: Simulated).

(a) for compound **1**

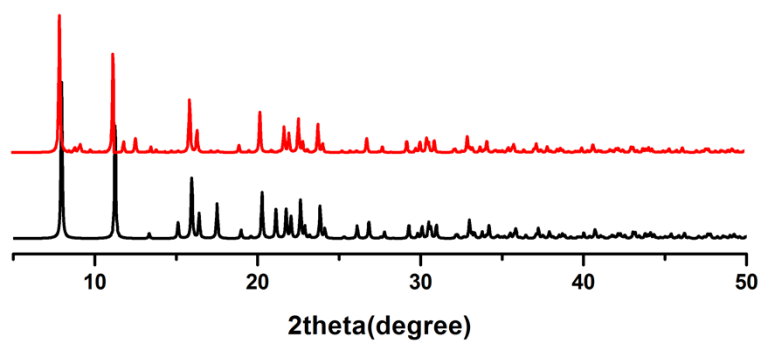


(b) for

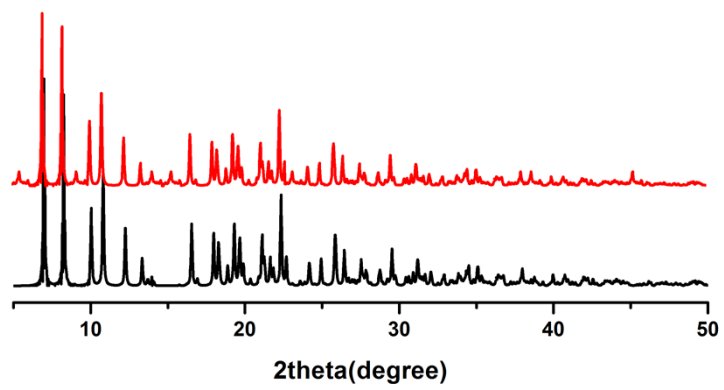
compound **2**



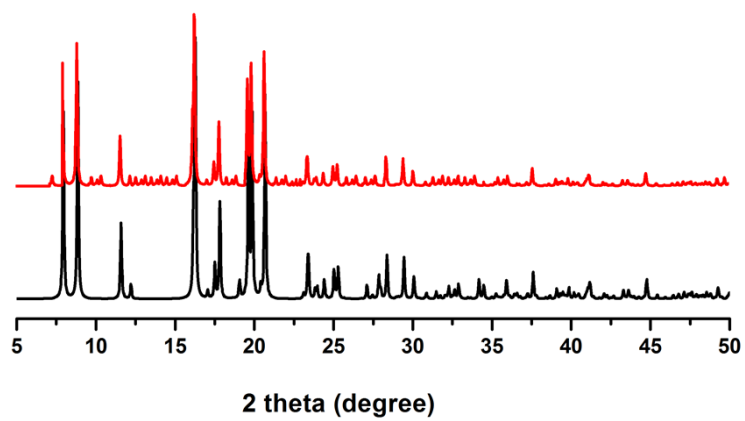
(c) for compound 3



(d) for compound 4



(e) for compound 5



(f) for compound 6

