Supplementary Material (ESI) for CrystEngComm
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A series of flexible bis(pyridyl)-bis(tetrazole)-modulated coordination polymers: construction, electrochemical properties, dye adsorption and magnetic properties

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Table S1 Selected bond distances (Å) and angles (°) for complexes **1–4**.

Complex **1**

Co(1)-O(7)	2.046(5)	Co(1)-N(2)#1	2.169(6)
Co(1)-O(9)	2.004(5)	Co(1)-N(1)	2.124(6)
Co(1)-O(2)	2.364(6)	Co(1)-O(1)	2.122(6)
O(9)-Co(1)-O(7)	115.1(2)	O(1)-Co(1)-N(2)#1	84.6(2)
O(9)-Co(1)-O(1)	147.9(2)	N(1)-Co(1)-N(2)#1	174.8(3)
O(7)-Co(1)-O(1)	94.3(2)	O(9)-Co(1)-O(2)	93.5(2)
O(9)-Co(1)-N(1)	91.5(2)	O(7)-Co(1)-O(2)	151.4(2)
O(7)-Co(1)-N(1)	92.4(2)	O(1)-Co(1)-O(2)	58.14(19)
O(1)-Co(1)-N(1)	100.3(2)	N(1)-Co(1)-O(2)	86.0(2)
O(9)-Co(1)-N(2)#1	83.4(2)	N(2)#1-Co(1)-O(2)	5.4(2)
O(7)-Co(1)-N(2)#1	88.8(2)		

Symmetry code: #1 -x+1,-y,-z+1;

Complex **2**

Co(1)-O(4)#1	1.989(3)	Co(1)-N(1)	2.144(3)
Co(1)-O(1)	2.012(2)	Co(1)-N(2)#1	2.173(3)
Co(1)-O(2)	2.032(2)	Co(1)#1-O(4)	1.989(2)
O(4)#1-Co(1)-O(1)	139.03(10)	C(16)-Co(1)-O(1)	113.7(2)
O(4)#1-Co(1)-O(2)	122.27(10)	C(1)-Co(1)-N(1)	121.2(2)
O(1)-Co(1)-O(2)	98.42(10)	C(5)-Co(1)-N(1)	121.9(2)
O(4)#1-Co(1)-N(1)	89.10(11)	C(42)-Co(1)-O(2)	116.5(2)
O(1)-Co(1)-N(1)	96.41(11)	C(15)-Co(1)#1-N(2)	123.6(3)
O(2)-Co(1)-N(1)	89.49(11)	C(13)-Co(1)#1-N(2)	119.6(2)
O(4)#1-Co(1)-N(2)#1	89.62(11)	C(42)-Co(1)#1-O(4)	169.0(2)
O(1)-Co(1)-N(2)#1	84.87(11)		

Symmetry code: #1 -x+1,-y,-z+1;

Complex **3**

Co(1)-O(2)	1.981(2)	Co(1)#7-N(10A)	2.104(10)
Co(1)-O(2)#1	1.981(2)	O(2)-Co(1)-O(2)#1	179.77(14
Co(1)-O(1W)	2.144(3)	O(2)-Co(1)-O(1W)	90.12(7)
Co(1)-O(3)#1	2.210(2)	O(2)#1-Co(1)-O(1W)	90.11(7)

Co(1)-O(3)	2.210(2)	O(2)-Co(1)-O(3)#1	90.07(8)
Co(2)-O(6)#2	1.9634(19)	O(2)#1-Co(1)-O(3)#1	89.94(8)
Co(2)-O(1)	2.014(2)	O(1W)-Co(1)-O(3)#1	86.09(5)
Co(2)-N(1)	2.092(3)	O(2)-Co(1)-O(3)	89.95(8)
Co(2)-O(4)	2.173(2)	O(2)#1-Co(1)-O(3)	90.07(8)
Co(2)-O(3)	2.187(2)	O(1W)-Co(1)-O(3)	86.09(5)
Co(2)#3-O(6)	1.9634(19)	O(3)#1-Co(1)-O(3)	172.19(10
O(6)#2-Co(2)-O(1)	112.16(9)	N(1)-Co(2)-O(4)	91.05(10)
O(6)#2-Co(2)-N(1)	95.63(9)	O(6)#2-Co(2)-O(3)	150.22(8)
O(1)-Co(2)-N(1)	88.48(10)	O(1)-Co(2)-O(3)	93.64(8)
O(6)#2-Co(2)-O(4)	94.50(8)	N(1)-Co(2)-O(3)	99.82(9)
O(1)-Co(2)-O(4)	153.25(8)	O(4)-Co(2)-O(3)	60.10(7)
Co(2)-O(3)-Co(1)	96.22(7)		

Symmetry code for : #1 x,y,z, #2 1-x,y,0.5-z, #3 -0.5+x,-0.5+y,z, #5 x-1,y,z

Complex **4**

Cu1-O5	1.955(3)	Cu1-O2	1.9639(3)
Cu1-O6	1.956(3)	Cu1-N1	2.176(3)
Cu1-O1	1.962(3)	O1-Cu1-02	88.72(12)
O5-Cu1-06	89.03(12)	O1-Cu1-N1	102.72(12
O5-Cu1-01	89.95(12)	O2-Cu1-N1	97.22(12)
O5-Cu1-02	168.13(11)	O6-Cu1-02	89.80(12)
O5-Cu1-N1	94.56(12)	O6-Cu1-N1	89.44(12)
O6-Cu1-01	167.84(12)		

Symmetry code for : #1 1-x,-1-y,1-z

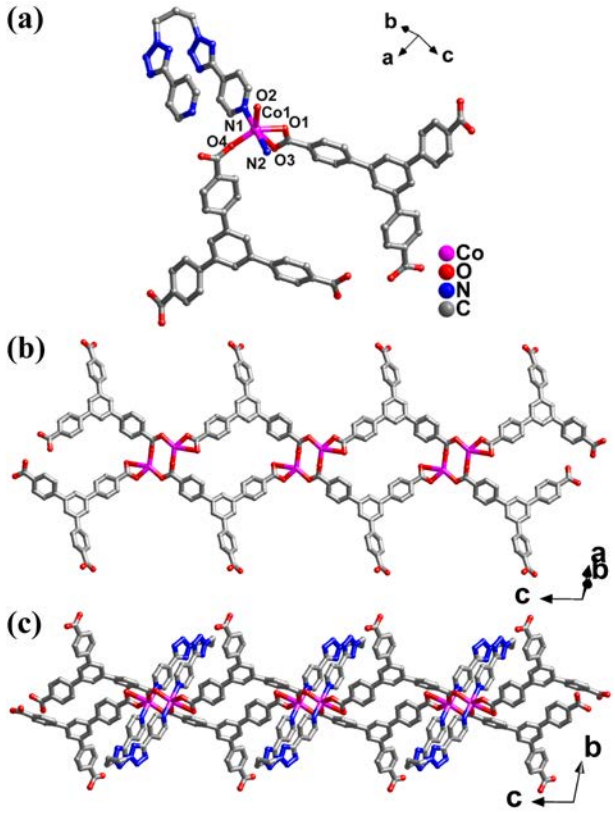


Fig. S1 (a) View of local coordination environment of Co(II) ion of **2**. (b) View of the 1D double chains of **2**. (c) The 1D cross-like chains of **2.**

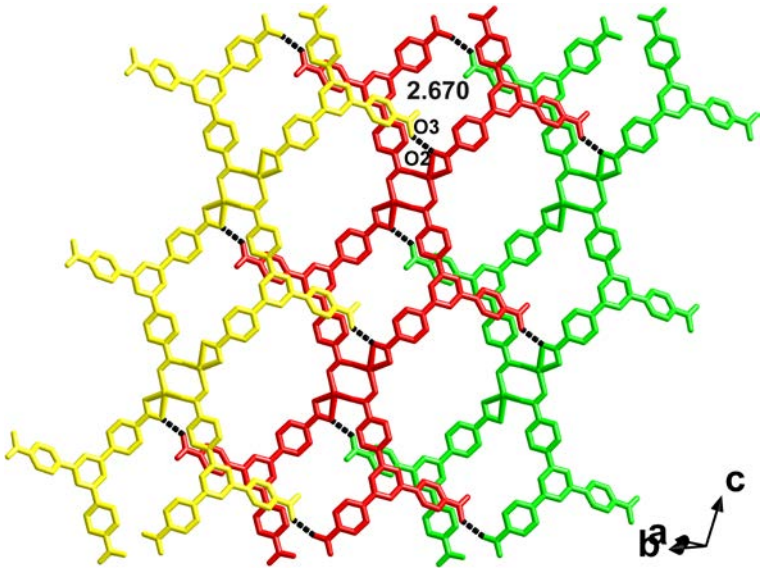


Fig. S2 View of 3D supramolecular architecture of **1**

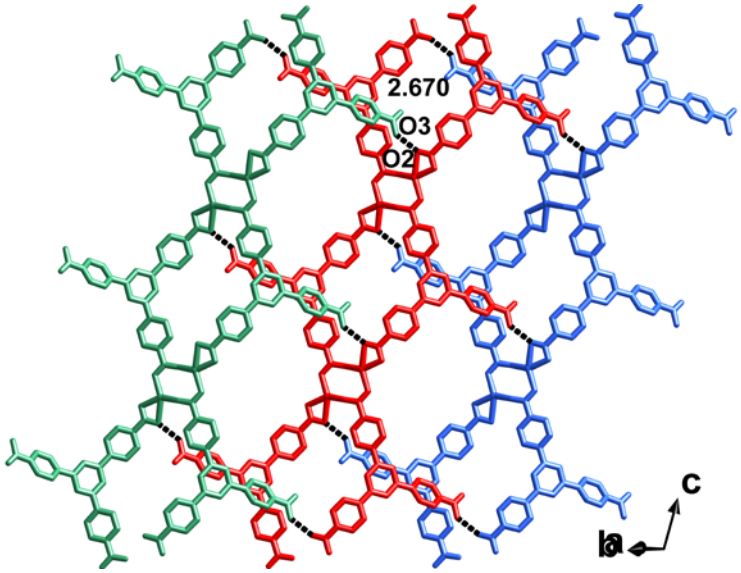


Fig. S3 View of 3D supramolecular architecture of **2**.

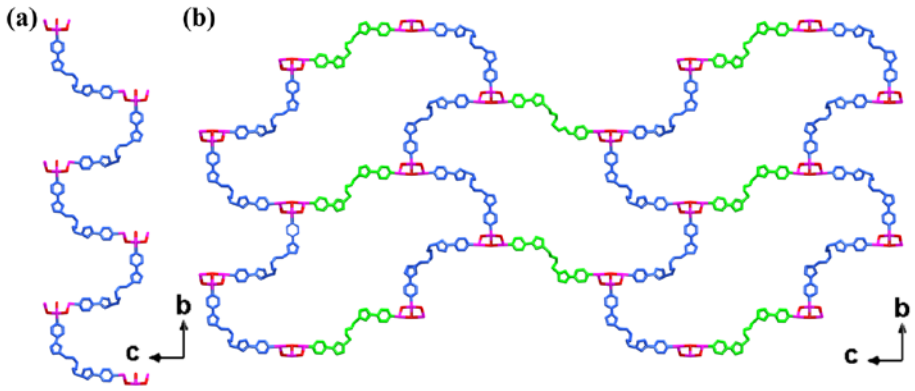


Fig. S4 (a) and (b) vertical direction 1D chain structure of **3**; (c) The 2D layered structure of **3** extended by 4-bptzh ligand.The color of 4-bptzh-1 and 4-bptzh-2 ligands are blue and green, respectively

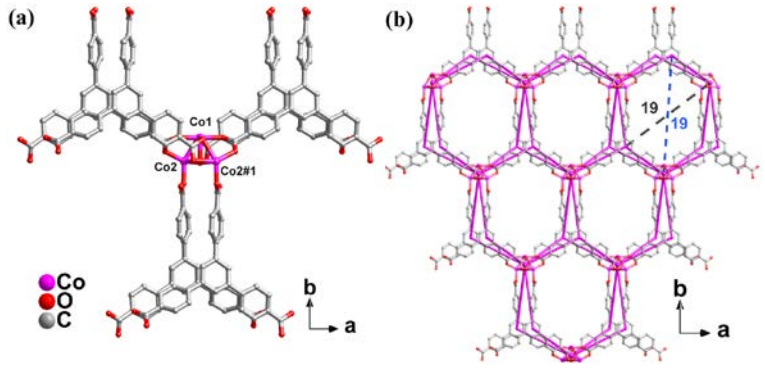


Fig. S5 View of 2D layered structure and 2D topology structure extended by 1,3,5-triyl-tribenzoic acid of **3**.

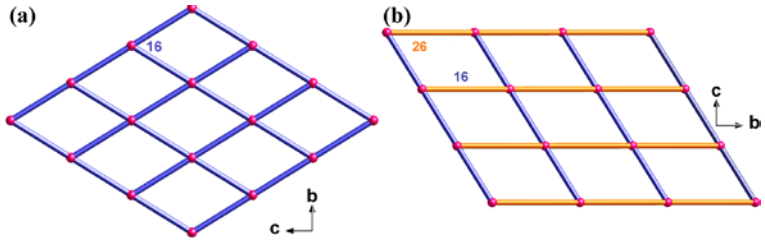
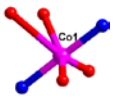
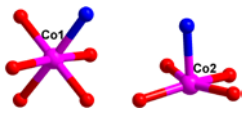
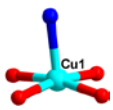
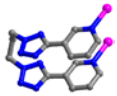
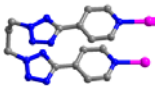
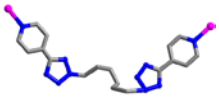
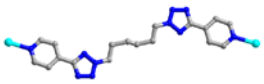
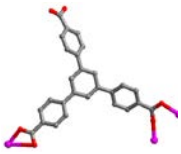
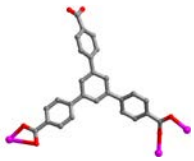
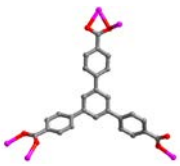
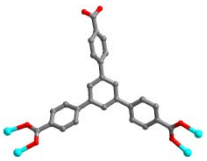
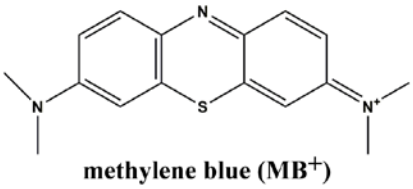
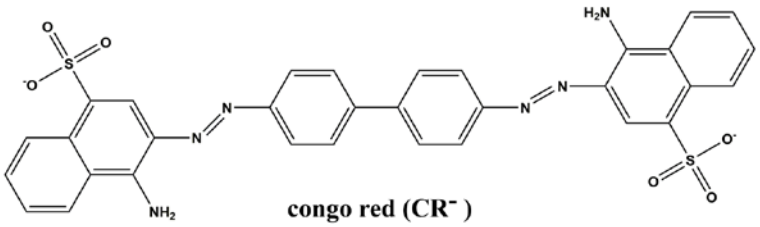


Fig. S6 View of 2D topology structure of **4.** The color of 4-bptzh and BTB ligands are blue and orange, respectively.

Table S2 Coordination modes of metal ions (Cu^{II} /Co^{II}), *N*-donor ligand and *O*-donor ligand in complexes **1**–**4**.

Complex	**1**	**2**	**3**	**4**
Metal ions				
N-donor ligand				
O-donor ligand				





Scheme S1 Chemical structures of MB and CR.

Table S3 The amount of organic dyes adsorbed by **1**–**4**

Adsorption quantity (mg g^{-1})	MB
1	3.802
2	11.12
3	19.79
4	16.05

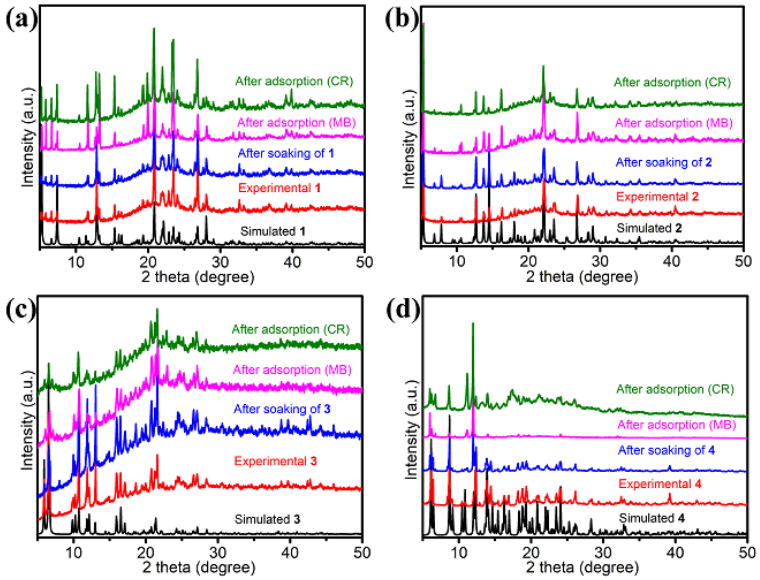


Fig. S7 The PXRD patterns of complexes **1**-**4**.

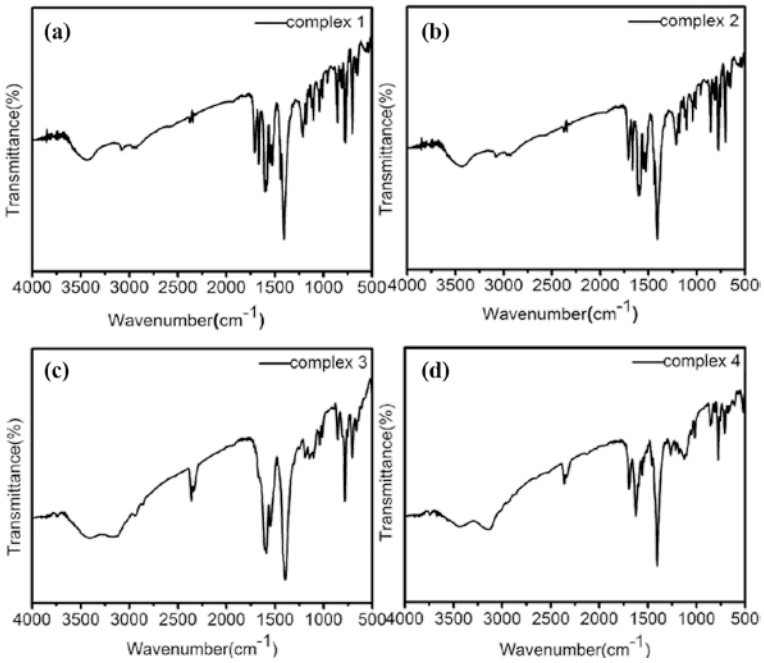


Fig. S8 The IR spectra of complexes **1**-**4**.

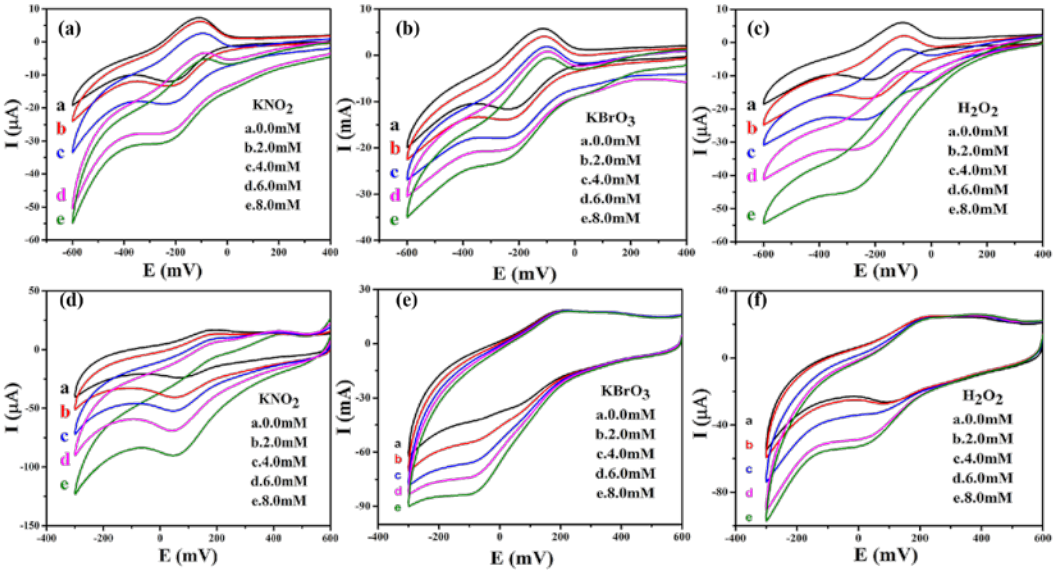


Fig. S9 The cyclic voltammograms in a 0.1 M H_2SO_4 + 0.5 M Na_2SO_4 aqueous solution containing 0.0 (a), 2.0 (b), 4.0 (c), 6.0 (d) and 8.0 (e) mmol L^{-1} nitrite, bromate, and H_2O_2, respectively. Scan rate: 20 mV s^{-1} for **1**-CPE (a-c) and **4**-CPE (d-e).

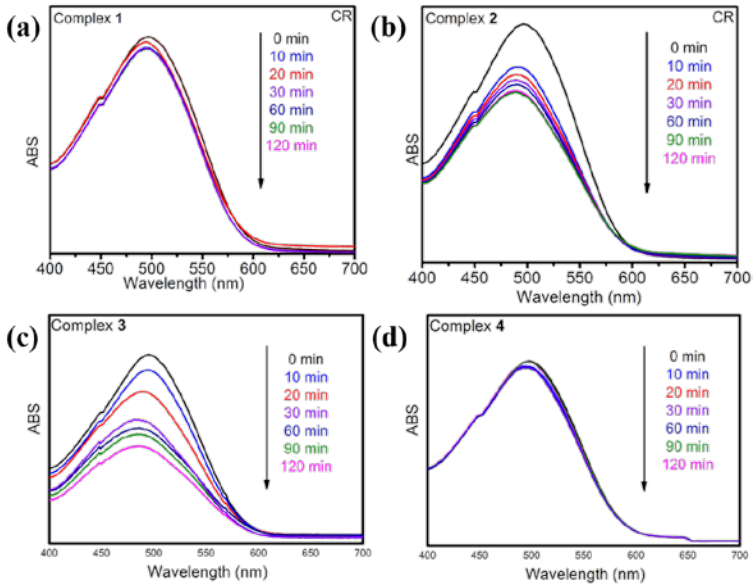


Fig. S10 UV-vis absorption spectra of the CR solutions after 120 min with complexes **1**-**4** in dark.

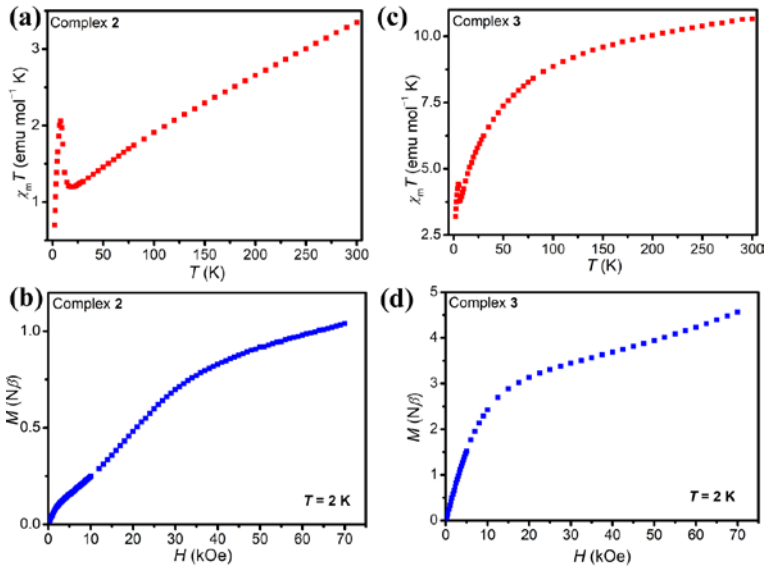


Fig. S11 Temperature dependence $\chi_m T$ for **2** and **3**; and the isothermal magnetization at 2 K for **2** and **3**.