Supporting Information

Solvothermal synthesis and magnetic properties of open-framework cobalt(II) phosphite structures of varying dimensionality

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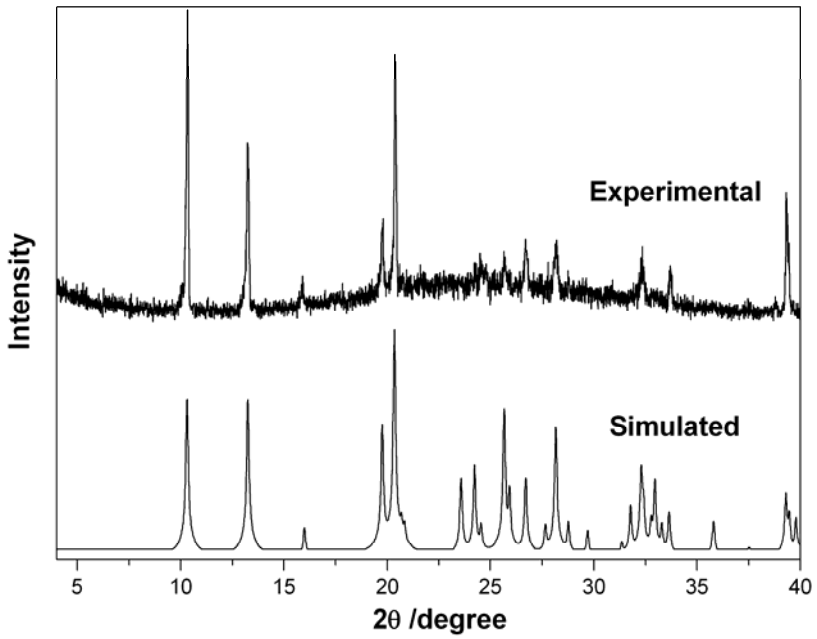

Fig. S1a Powder X-ray diffraction (XRD) pattern of the compound **1** compared with the simulated pattern.

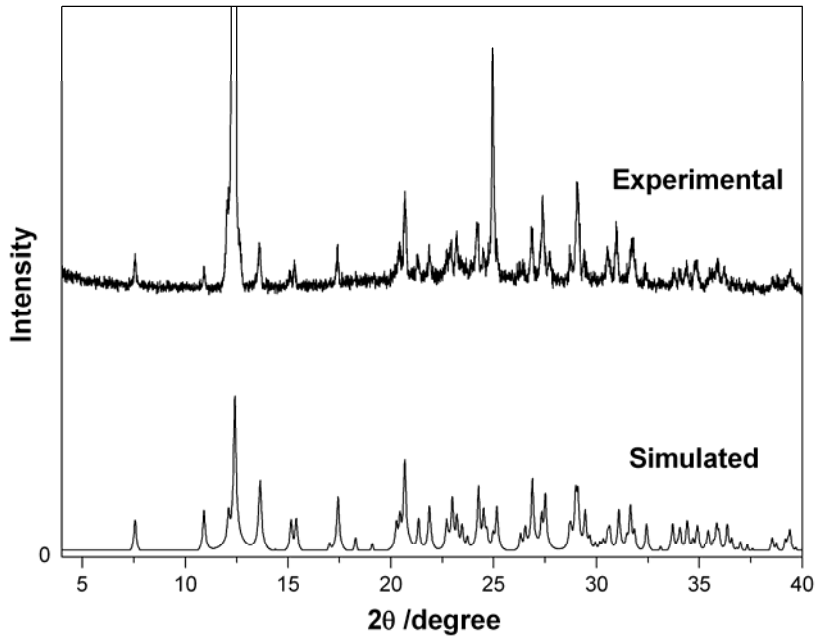

Fig. S1b Powder X-ray diffraction (XRD) pattern of the compound **2** compared with the simulated pattern.

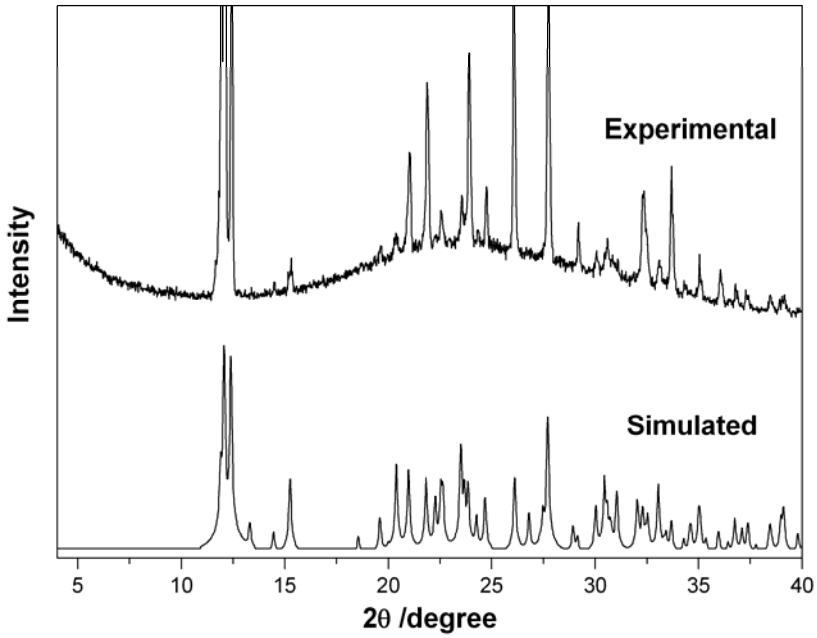

Fig. S1c Powder X-ray diffraction (XRD) pattern of the compound **3** compared with the simulated pattern.

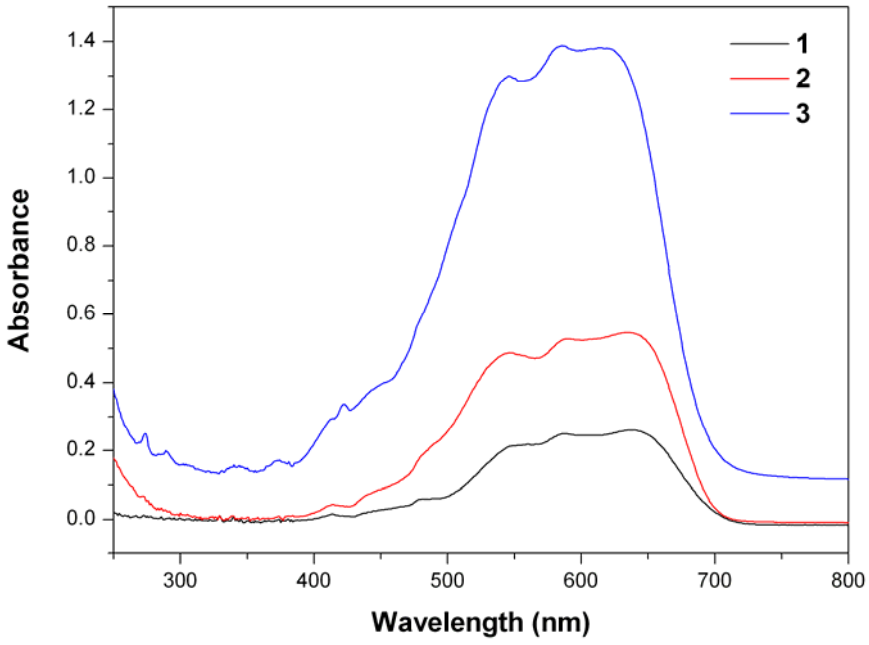

Fig. S2 The UV-Vis diffuse reflectance spectrum for compound **1-3**.

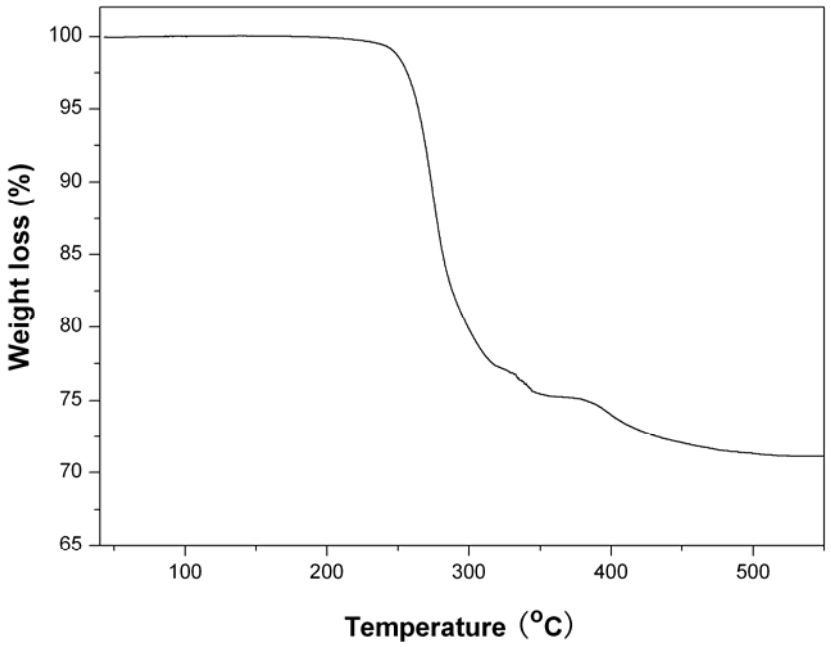

Fig. S3a TG curves for compound **1**.

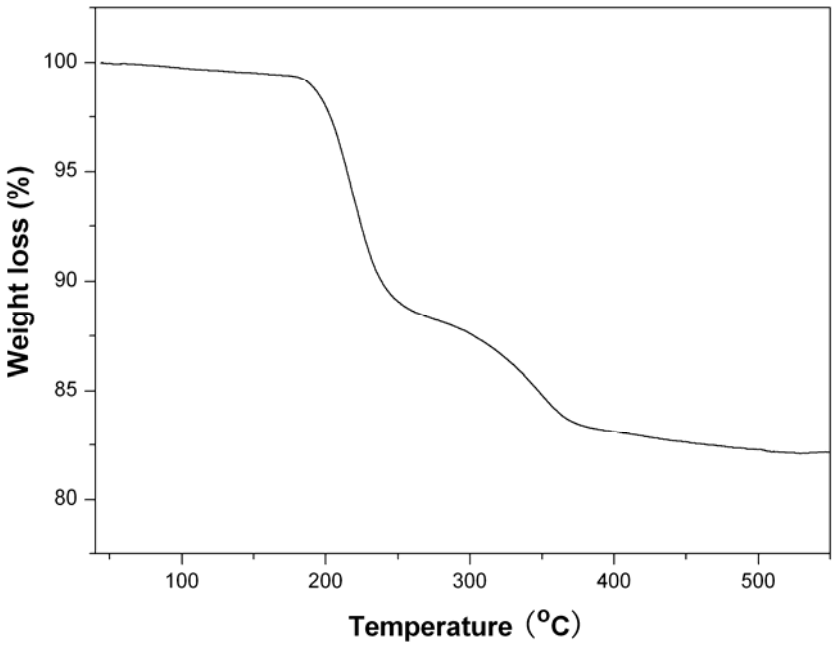

Fig. S3b TG curves for compound **2**.

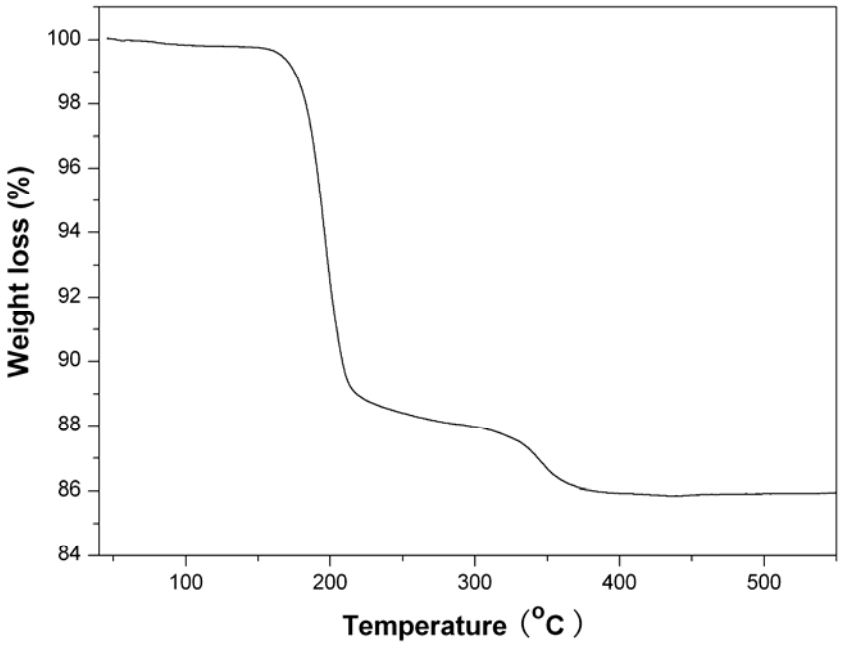

Fig. S3c TG curves for compound **3**.

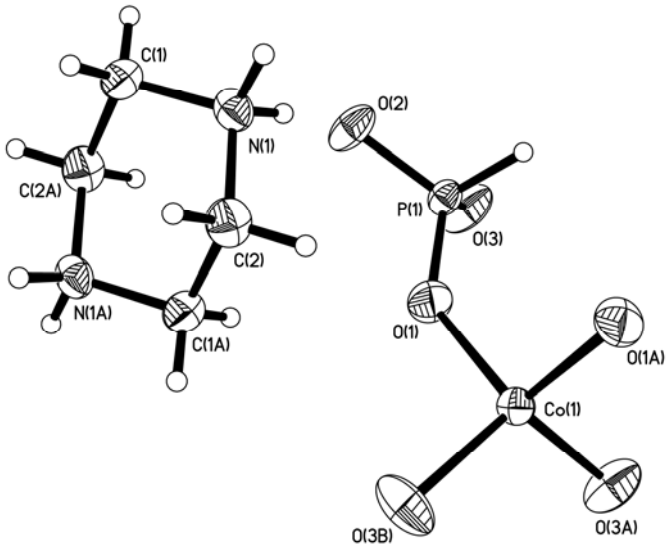

Fig. S4a Thermal ellipsoids given at 50% probability, showing the atomic labeling scheme of compound **1**.

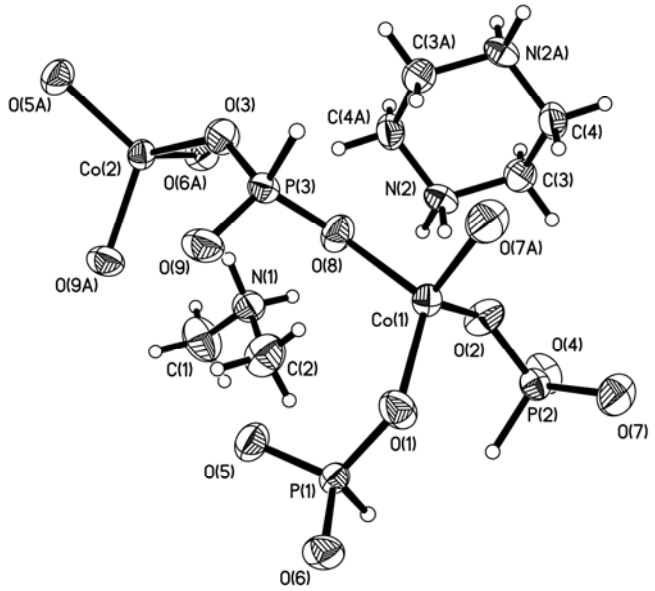

Fig. S4b Thermal ellipsoids given at 50% probability, showing the atomic labeling scheme of compound **2**.

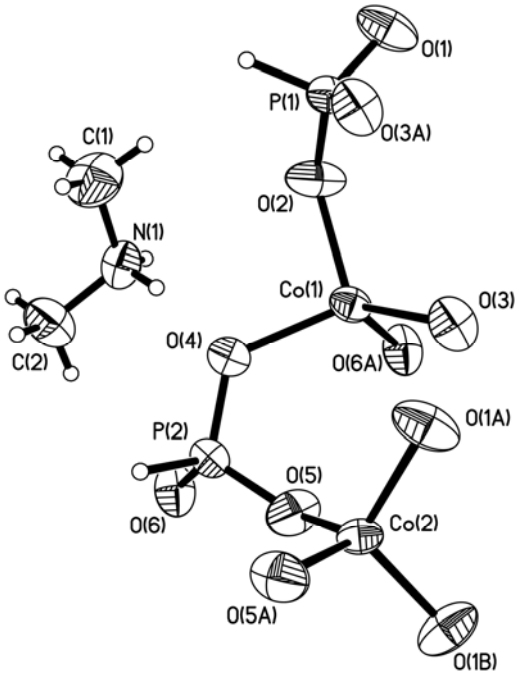

Fig. S4c Thermal ellipsoids given at 50% probability, showing the atomic labeling scheme of compound **3**.

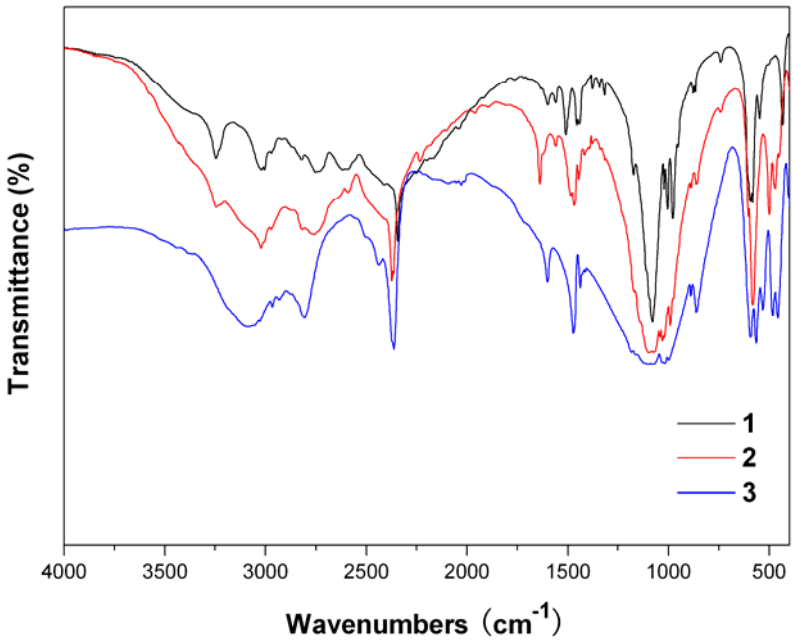

Fig. S5 IR spectrum of compound **1-3**.

Table S1. Selected bond lengths [Å] and angles [˚] for compound **1**, **2** and **3**

Compound **1**			
Co(1)-O(1)	1.9558(16)	P(1)-O(1)	1.5140(17)
Co(1)-O(1)#3	1.9558(16)	P(1)-O(2)	1.5115(16)
Co(1)-O(3)#1	1.9377(16)	P(1)-O(3)	1.5109(18)
Co(1)-O(3)#2	1.9377(16)	P(1)-H(1)	1.27(2)
O(1)-Co(1)-O(1)#3	108.33(10)	O(1)-P(1)-O(2)	111.04(10)
O(1)-Co(1)-O(3)#1	112.54(8)	O(1)-P(1)-O(3)	113.70(10)
O(1)-Co(1)-O(3)#2	105.58(8)	O(2)-P(1)-O(3)	109.97(9)
O(1)#3-Co(1)-O(3)#1	105.58(8)	O(1)-P(1)-H(1)	106.9(9)
O(1)#3-Co(1)-O(3)#2	112.54(8)	O(2)-P(1)-H(1)	108.1(9)
O(3)#1-Co(1)-O(3)#2	112.34(12)	O(3)-P(1)-H(1)	106.8(9)
Compound **2**			
Co(1)-O(1)	1.930(2)	P(1)-O(1)	1.509(2)
Co(1)-O(2)	1.961(2)	P(1)-O(5)	1.505(2)
Co(1)-O(7)#6	1.931(2)	P(1)-O(6)	1.5124(19)
Co(1)-O(8)	1.958(2)	P(1)-H(1)	1.36(3)
Co(2)-O(3)	1.9422(19)	P(2)-O(2)	1.522(2)
Co(2)-O(5)#4	1.928(2)	P(2)-O(4)	1.507(2)
Co(2)-O(6)#5	1.9677(19)	P(2)-O(7)	1.506(2)
Co(2)-O(9)#4	1.942(2)	P(2)-H(2)	1.34(3)
		P(3)-O(3)	1.505(2)
		P(3)-O(8)	1.518(2)
		P(3)-O(9)	1.513(2)
		P(3)-H(3)	1.34(3)
O(1)-Co(1)-O(2)	110.85(10)	O(1)-P(1)-O(5)	113.60(11)
O(1)-Co(1)-O(7)#6	112.29(10)	O(1)-P(1)-O(6)	111.03(11)
O(1)-Co(1)-O(8)	118.47(9)	O(5)-P(1)-O(6)	113.65(12)
O(2)-Co(1)-O(7)#6	113.97(10)	H(1)-P(1)-O(1)	107.4(11)
O(2)-Co(1)-O(8)	96.37(9)	H(1)-P(1)-O(5)	104.3(11)
O(7)#6-Co(1)-O(8)	103.97(9)	H(1)-P(1)-O(6)	106.2(11)
O(3)-Co(2)-O(5)#4	107.52(9)	O(2)-P(2)-O(4)	110.97(12)
O(3)-Co(2)-O(6)#5	103.54(9)	O(2)-P(2)-O(7)	112.32(12)
O(3)-Co(2)-O(9)#4	114.80(9)	O(4)-P(2)-O(7)	112.60(13)
O(5)#4-Co(2)-O(6)#5	120.15(9)	H(2)-P(2)-O(2)	106.0(11)
O(5)#4-Co(2)-O(9)#4	114.54(9)	H(2)-P(2)-O(4)	106.0(11)
O(6)#5-Co(2)-O(9)#4	95.86(9)	H(2)-P(2)-O(7)	108.5(11)
		O(3)-P(3)-O(8)	111.36(11)
		O(3)-P(3)-O(9)	113.85(12)
		O(8)-P(3)-O(9)	113.06(12)
		H(3)-P(3)-O(3)	106.0(11)

		H(3)-P(3)-O(8)	105.3(11)
		H(3)-P(3)-O(9)	106.5(11)
Compoud **3**			
Co(1)-O(2)	1.957(3)	P(1)-O(1)	1.515(3)
Co(1)-O(3)	1.939(3)	P(1)-O(2)	1.494(3)
Co(1)-O(4)	1.974(3)	P(1)-O(3)#9	1.498(3)
Co(1)-O(6)#7	1.948(3)	P(1)-H(1)	1.27(4)
Co(2)-O(1)#9	1.947(3)	P(2)-O(4)	1.520(3)
Co(2)-O(1)#10	1.947(3)	P(2)-O(5)	1.513(3)
Co(2)-O(5)	1.937(3)	P(2)-O(6)	1.508(3)
Co(2)-O(5)#8	1.937(3)	P(2)-H(2)	1.31(4)
O(2)-Co(1)-O(3)	114.40(13)	O(1)-P(1)-O(2)	110.17(18)
O(2)-Co(1)-O(4)	99.05(13)	O(1)-P(1)-O(3)#9	113.27(17)
O(2)-Co(1)-O(6)#7	111.48(13)	O(2)-P(1)-O(3)#9	115.52(17)
O(3)-Co(1)-O(4)	120.93(12)	H(1)-P(1)-O(1)	108.7(18)
O(3)-Co(1)-O(6)#7	99.96(12)	H(1)-P(1)-O(2)	104.8(18)
O(4)-Co(1)-O(6)#7	111.46(12)	H(1)-P(1)-O(3)#9	103.6(18)
O(1)#9-Co(2)-O(1)#10	114.5(2)	O(4)-P(2)-O(5)	111.70(16)
O(1)#9-Co(2)-O(5)	119.62(12)	O(4)-P(2)-O(6)	112.63(17)
O(1)#9-Co(2)-O(5)#8	93.80(13)	O(5)-P(2)-O(6)	112.06(16)
O(1)#10-Co(2)-O(5)#8	119.62(12)	H(2)-P(2)-O(4)	106.5(19)
O(1)#10-Co(2)-O(5)	93.80(13)	H(2)-P(2)-O(5)	109.1(19)
O(5)#8-Co(2)-O(5)	117.59(19)	H(2)-P(2)-O(6)	104.4(19)

Symmetry transformations used to generate equivalent atoms:

#1 -x,-y,-z+1 #2 x,-y,z-1/2 #3 -x,y,-z+1/2
#4 -x+1,-y+1,-z #5 x,y-1,z #6 -x+1,-y+2,-z-1
#7 -x+1,-y,-z-1 #8 -x+1,y,-z-1/2 #9 -x+1/2,-y+1/2,-z-1
#10x+1/2,-y+1/2,z+1/2

Table S2. Hydrogen-bond geometry(Å,°) for compound **1**, **2** and **3**

D-H...A	d(D-H)	d(H...A)	d(D...A)	< (DHA)
Compoud **1**				
N(1)-H(1NA)...O(2)	0.87(3)	1.86(3)	2.713(3)	166(2)
N(1)-H(1NB)...O(2)#1	0.93(2)	1.78(2)	2.675(2)	161(2)
Compoud **2**				
N(1)-H(1NB)...O(4)#2	0.94(4)	1.83(4)	2.751(3)	165(4)
N(1)-H(1NA)...O(6)#3	0.96(4)	1.94(4)	2.871(3)	165(3)
N(1)-H(1NA)...O(9)#4	0.96(4)	2.58(4)	3.115(3)	115(3)
N(2)-H(2NA)...O(2)	0.87(4)	1.97(4)	2.807(3)	162(3)
N(2)-H(2NB)...O(4)#2	1.03(4)	1.65(4)	2.675(3)	174(3)
Compoud **3**				
N(1)-H(1NB)...O(4)	0.87(5)	2.06(5)	2.928(5)	172(4)
N(1)-H(1NA)...O(1)#5	0.82(5)	2.04(5)	2.821(5)	159(5)

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