

Supplementary Information

**Synthesis and properties of four coordination polymers built
from a semi-rigid tripod carboxylic acid**

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Content

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1- Selected bond lengths and angles of compounds 1-4

Table S1 Selected bond lengths (Å) and angles (°) for **1-4**.

1			
Cd1—O8	2.175(4)	Cd1—O4 ⁱⁱⁱ	2.232(4)
Cd1—O1 ^v	2.321(3)	Cd1—O2 ^v	2.410(4)
Cd1—O5 ⁱⁱⁱ	2.511(4)	Cd1—O1W	2.536(4)
Cd2—O2W	1.998(3)	Cd2—O10	2.267(4)
Cd2—O7	2.287(4)	Cd2—O3W	2.333(4)
Cd2—O1W	2.581(5)	Cd3—O11	2.131(4)
Cd3—O14 ⁱⁱ	2.271(5)	Cd3—O16 ^{vi}	2.334(4)
Cd3—O17 ^{vi}	2.361(4)	Cd3—O4W	2.394(4)
Cd3—O13 ⁱⁱ	2.643(4)		
O8—Cd1—O4 ⁱⁱⁱ	87.28(16)	O8—Cd1—O1 ^v	106.83(14)
O4 ⁱⁱⁱ —Cd1—O1 ^v	140.10(14)	O8—Cd1—O2 ^v	95.99(14)
O4 ⁱⁱⁱ —Cd1—O2 ^v	87.81(13)	O1 ^v —Cd1—O2 ^v	54.33(12)
O8—Cd1—O5 ⁱⁱⁱ	130.97(13)	O4 ⁱⁱⁱ —Cd1—O5 ⁱⁱⁱ	53.77(13)
O1 ^v —Cd1—O5 ⁱⁱⁱ	122.10(13)	O2 ^v —Cd1—O5 ⁱⁱⁱ	109.19(13)
O8—Cd1—O1W	118.11(15)	O4 ⁱⁱⁱ —Cd1—O1W	117.81(13)
O1 ^v —Cd1—O1W	88.69(13)	O2 ^v —Cd1—O1W	136.63(13)
O5 ⁱⁱⁱ —Cd1—O1W	69.08(13)	O2W—Cd2—O10	91.02(13)
O2W—Cd2—O7	86.03(12)	O10—Cd2—O7	173.40(14)
O2W—Cd2—O3W	86.62(13)	O10—Cd2—O3W	95.18(14)
O7—Cd2—O3W	90.54(12)	O2W—Cd2—O1W	113.05(14)
O10—Cd2—O1W	99.40(14)	O7—Cd2—O1W	76.43(13)
O3W—Cd2—O1W	155.09(12)	O11—Cd3—O14 ⁱⁱ	116.23(17)
O11—Cd3—O16 ^{vi}	147.52(16)	O14 ⁱⁱ —Cd3—O16 ^{vi}	96.21(16)
O11—Cd3—O17 ^{vi}	101.73(15)	O14 ⁱⁱ —Cd3—O17 ^{vi}	120.98(16)
O16 ^{vi} —Cd3—O17 ^{vi}	56.26(13)	O11—Cd3—O4W	83.31(14)
O14 ⁱⁱ —Cd3—O4W	82.42(16)	O16 ^{vi} —Cd3—O4W	103.80(13)
O17 ^{vi} —Cd3—O4W	148.40(15)	O11—Cd3—O13 ⁱⁱ	98.68(15)
O14 ⁱⁱ —Cd3—O13 ⁱⁱ	52.71(15)	O16 ^{vi} —Cd3—O13 ⁱⁱ	99.79(13)
O17 ^{vi} —Cd3—O13 ⁱⁱ	79.46(14)	O4W—Cd3—O13 ⁱⁱ	131.11(14)

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

2

Mn1—O2	2.111(2)	Mn1—O17 ⁱ	2.118(2)
Mn1—O13 ⁱⁱ	2.129(2)	Mn1—O5 ⁱⁱⁱ	2.170(2)
Mn1—O10	2.308(2)	Mn1—O11	2.467(2)
Mn2—O8 ^{iv}	2.076(2)	Mn2—O4 ⁱⁱⁱ	2.152(2)
Mn2—O14 ⁱⁱ	2.196(2)	Mn2—O20	2.220(2)
Mn2—O11	2.236(2)	Mn3—O16 ⁱ	2.072(2)
Mn3—O1	2.117(2)	Mn3—O2W	2.139(2)
Mn3—O19	2.214(2)	Mn3—O1W	2.215(2)

Mn3—O10	2.249(2)		
O2—Mn1—O17 ⁱ	96.21(7)	O2—Mn1—O13 ⁱⁱ	88.56(8)
O17 ⁱ —Mn1—O13 ⁱⁱ	115.48(8)	O2—Mn1—O5 ⁱⁱⁱ	178.89(8)
O17 ⁱ —Mn1—O5 ⁱⁱⁱ	84.86(7)	O13 ⁱⁱ —Mn1—O5 ⁱⁱⁱ	90.71(8)
O2—Mn1—O10	92.46(8)	O17 ⁱ —Mn1—O10	106.05(8)
O13 ⁱⁱ —Mn1—O10	138.09(8)	O5 ⁱⁱⁱ —Mn1—O10	87.52(7)
O2—Mn1—O11	99.71(7)	O17 ⁱ —Mn1—O11	154.90(8)
O13 ⁱⁱ —Mn1—O11	84.34(8)	O5 ⁱⁱⁱ —Mn1—O11	79.39(7)
O10—Mn1—O11	54.19(7)	O8 ^{iv} —Mn2—O4 ⁱⁱⁱ	97.44(9)
O8 ^{iv} —Mn2—O14 ⁱⁱ	132.43(10)	O4 ⁱⁱⁱ —Mn2—O14 ⁱⁱ	89.88(9)
O8 ^{iv} —Mn2—O20	91.06(9)	O4 ⁱⁱⁱ —Mn2—O20	170.93(8)
O14 ⁱⁱ —Mn2—O20	82.03(10)	O8 ^{iv} —Mn2—O11	100.22(9)
O4 ⁱⁱⁱ —Mn2—O11	101.20(8)	O14 ⁱⁱ —Mn2—O11	124.38(8)
O20—Mn2—O11	80.27(9)	O16 ⁱ —Mn3—O1	96.04(10)
O16 ⁱ —Mn3—O2W	88.57(10)	O1—Mn3—O2W	171.38(9)
O16 ⁱ —Mn3—O19	178.15(9)	O1—Mn3—O19	84.77(8)
O2W—Mn3—O19	90.84(8)	O16 ⁱ —Mn3—O1W	93.35(11)
O1—Mn3—O1W	85.37(9)	O2W—Mn3—O1W	87.10(9)
O19—Mn3—O1W	88.37(9)	O16 ⁱ —Mn3—O10	88.95(9)
O1—Mn3—O10	94.07(8)	O2W—Mn3—O10	93.28(8)
O19—Mn3—O10	89.33(8)	O1W—Mn3—O10	177.67(10)

(i) x, y, 1+z; (ii) x, 1+y, 1+z; (iii) -1+x, -1+y, z; (iv) -1+x, -1+y, -1+z; (v) 1+x, 1+y, z; (vi) 1+x, 1+y, 1+z; (vii) x, -1+y, -1+z; (viii) x, y, -1+z.

3

Co1—O14 ⁱ	2.062(2)	Co1—O12 ⁱⁱⁱ	2.065(2)
Co1—O1	2.160(2)	Co2—O15 ⁱⁱ	2.026(2)
Co2—O13 ⁱⁱⁱ	2.008(2)	Co2—O1	2.134(2)
Co2—O2	2.141(2)	Co2—O4	2.176(2)
Co2—O3	2.182(2)	Co3—O7	1.909(2)
Co3—O21 ⁱⁱⁱ	1.925(2)	Co3—O20 ⁱⁱ	1.998(2)
Co3—O8	2.012(2)	Co4—O19 ⁱⁱ	2.066(2)
Co4—O23	2.066(2)	Co4—O22 ⁱⁱⁱ	2.079(3)
Co4—O6	2.083(2)	Co4—O5	2.102(2)
Co4—O4	2.127(2)		
O14 ⁱ —Co1—O14 ⁱⁱ	180.0(1)	O14 ⁱ —Co1—O12 ⁱⁱⁱ	92.03(9)
O14 ⁱⁱ —Co1—O12 ⁱⁱⁱ	87.97(9)	O12 ⁱⁱⁱ —Co1—O12 ^{iv}	180.000(1)
O14 ⁱ —Co1—O1	85.50(9)	O14 ⁱⁱ —Co1—O1	94.50(9)
O12 ⁱⁱⁱ —Co1—O1	89.80(9)	O12 ^{iv} —Co1—O1	90.20(9)
O1—Co1—O1 ^v	180.0(1)	O13 ^{iv} —Co2—O15 ⁱⁱ	95.47(9)
O13 ^{iv} —Co2—O1	104.11(9)	O15 ⁱⁱ —Co2—O1	99.83(9)
O13 ^{iv} —Co2—O2	164.30(9)	O15 ⁱⁱ —Co2—O2	93.22(9)
O1—Co2—O2	61.41(9)	O13 ^{iv} —Co2—O4	93.61(9)
O15 ⁱⁱ —Co2—O4	96.15(9)	O1—Co2—O4	154.75(9)

O2—Co2—O4	98.44(9)	O13iv—Co2—O3	87.77(9)
O15ii—Co2—O3	156.22(9)	O1—Co2—O3	102.20(9)
O2—Co2—O3	89.54(9)	O4—Co2—O3	60.10(9)

(i) 2-x, 2-y, 1-z; (ii) x, y, 1+z; (iii) 1-x, 1-y, 1-z; (iv) 1+x, 1+y, 1+z; (v) 2-x, 2-y, 2-z; (vi) -1+x, -1+y, -1+z; (vii) x, y, -1+z.

4

Zn1—O15 ^v	2.0576(18)	Zn1—O18 ⁱ	2.0728(19)
Zn1—O1	2.0892(19)	Zn1—O12	2.081(2)
Zn1 ⁱⁱⁱ —O15	2.0575(18)	Zn1 ^{iv} —O18	2.0727(19)
Zn1—O1W	2.113(2)	Zn2—O3	1.9290(18)
Zn2—O6 ^{vi}	1.978(2)	Zn2—O9 ^{iv}	1.970(2)
Zn3—O11	1.944(2)	Zn3—O14 ^v	1.937(2)
Zn3 ⁱⁱⁱ —O14	1.937(2)	Zn3—O17 ⁱ	1.9672(18)
Zn3—O20	2.036(2)		
O2W—Zn1—O15 ^v	89.97(7)	O2W—Zn1—O18 ⁱ	176.50(8)
O15 ^v —Zn1—O18 ⁱ	93.14(7)	O2W—Zn1—O12	88.76(8)
O15 ^v —Zn1—O12	94.52(8)	O18 ⁱ —Zn1—O12	92.58(8)
O2W—Zn1—O1	87.17(8)	O15 ^v —Zn1—O1	174.51(8)
O18 ⁱ —Zn1—O1	89.59(7)	O12—Zn1—O1	90.11(8)
O2W—Zn1—O1W	92.83(8)	O15 ^v —Zn1—O1W	88.16(8)
O18 ⁱ —Zn1—O1W	85.69(8)	O12—Zn1—O1W	176.90(7)
O1—Zn1—O1W	87.30(8)	O3—Zn2—O9 ^{iv}	115.07(8)
O3—Zn2—O6 ^{vi}	103.74(8)	O9 ^{iv} —Zn2—O6 ^{vi}	106.16(8)
O3—Zn2—O3W	123.30(8)	O9 ^{iv} —Zn2—O3W	109.93(8)
O6 ^{vi} —Zn2—O3W	94.77(8)	O3—Zn2—C33 ^{iv}	110.56(8)
O14 ^v —Zn3—O11	123.36(8)	O14 ^v —Zn3—O17 ⁱ	119.60(8)
O11—Zn3—O17 ⁱ	109.90(8)	O14 ^v —Zn3—O20	95.52(8)
O11—Zn3—O20	103.85(9)	O17 ⁱ —Zn3—O20	97.59(8)

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

2- Powder X-ray diffraction of compounds 1-4

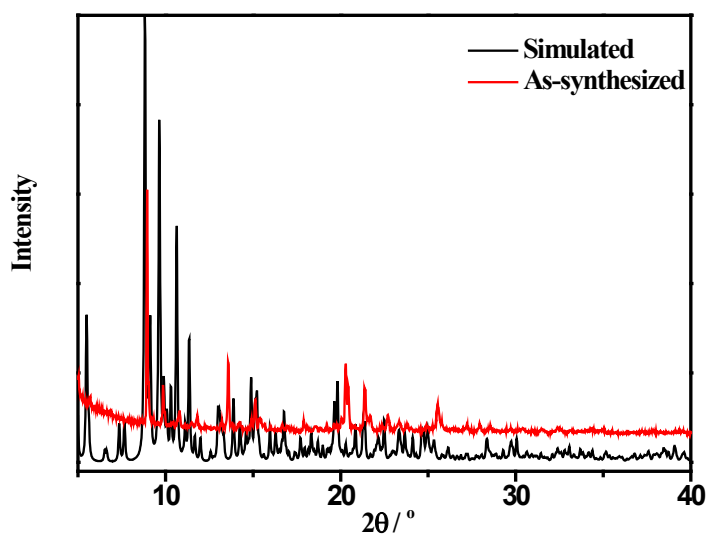


Figure S1. X-ray powder diffraction patterns of compound 1.

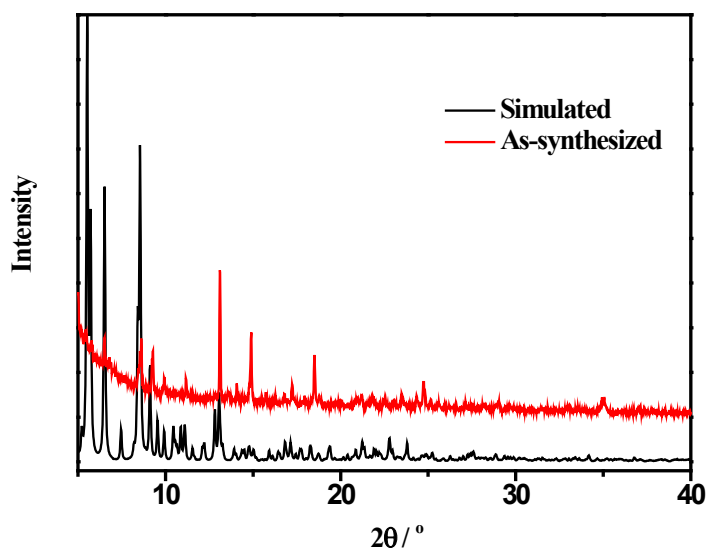


Figure S2. X-ray powder diffraction patterns of compound 2.

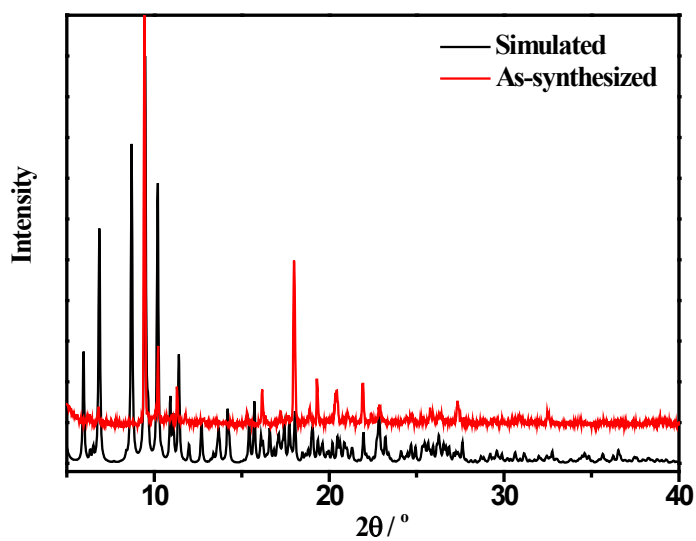


Figure S3. X-ray powder diffraction patterns of compound 3.

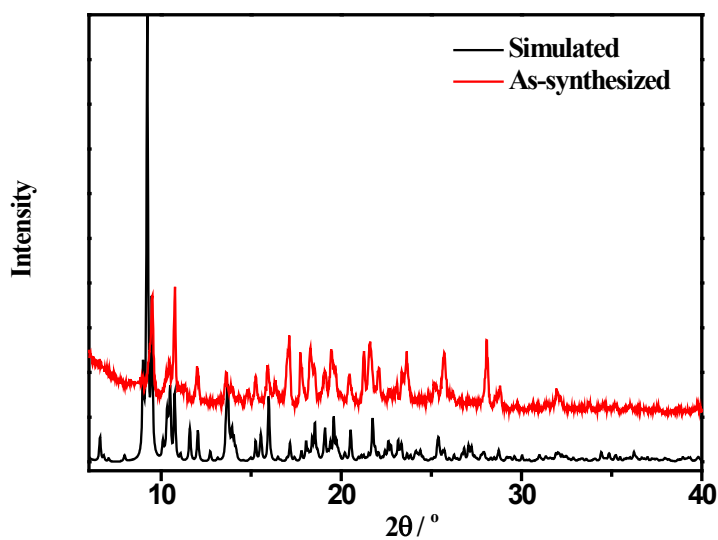


Figure S4. X-ray powder diffraction patterns of compound 4.

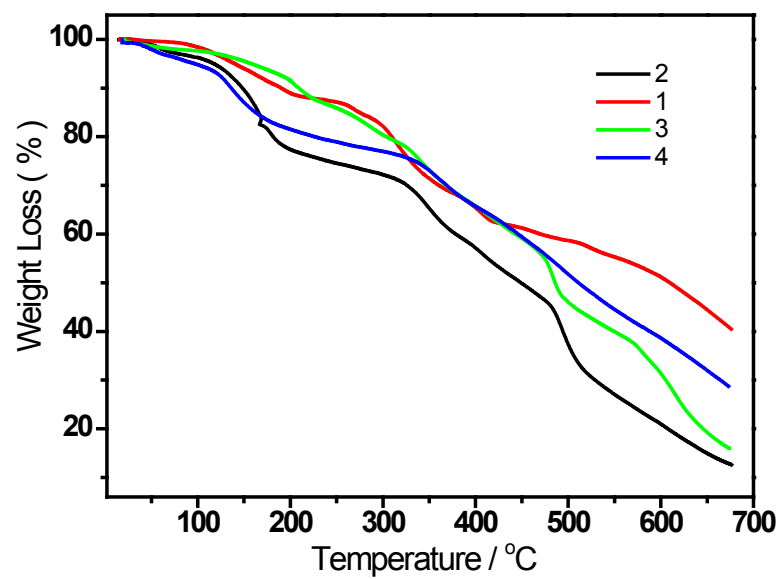


Figure S5. The TGA curves of 1, 2, 3 and 4