Electronic Supplementary Material (ESI) for New Journal of Chemistry

New Journal of Chemistry 2013

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A chiral porous cobalt-organic framework based on reinforced sinusoidal-like SBUs involving *in situ*-generated formate†

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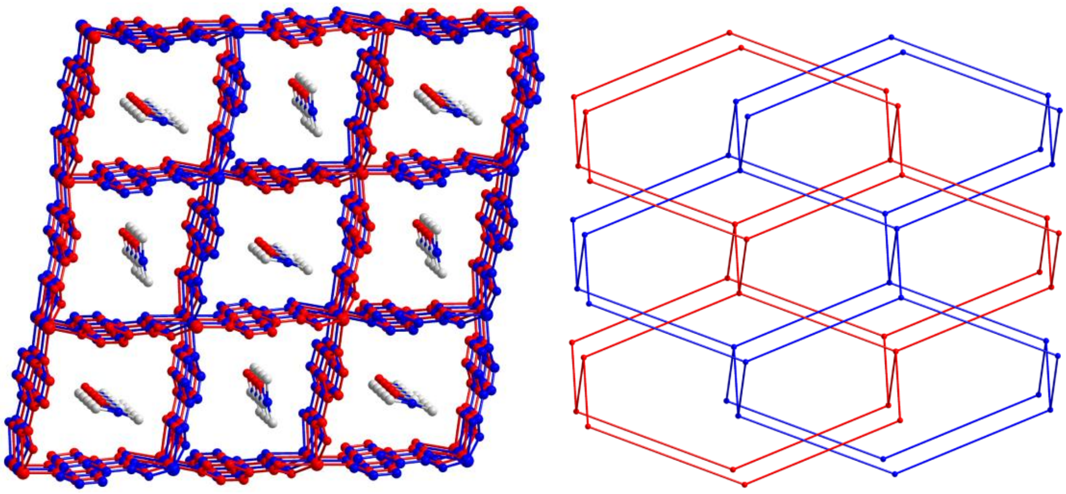

(a) (b)

Fig. S1 Perspective view of 2-fold interpenetrated open framework (a) and simplified diamond net (b) in complex **2**.

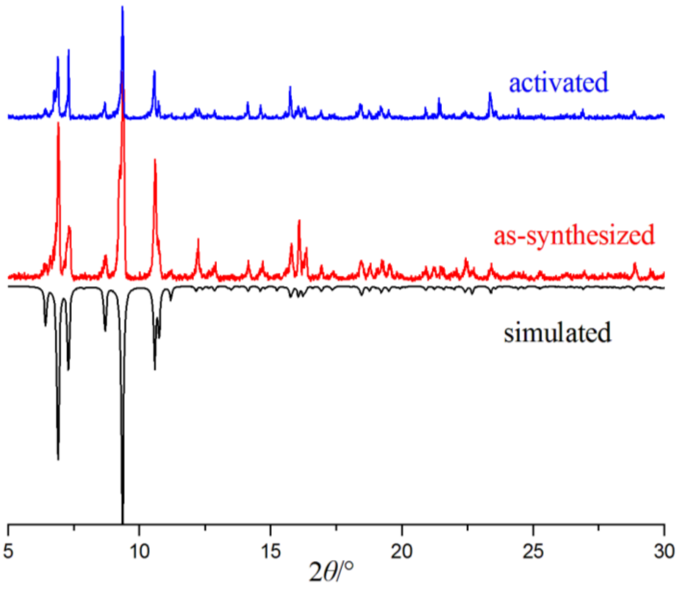

Fig. S2 The PXRD plots of crystal **1** and activated **1**.

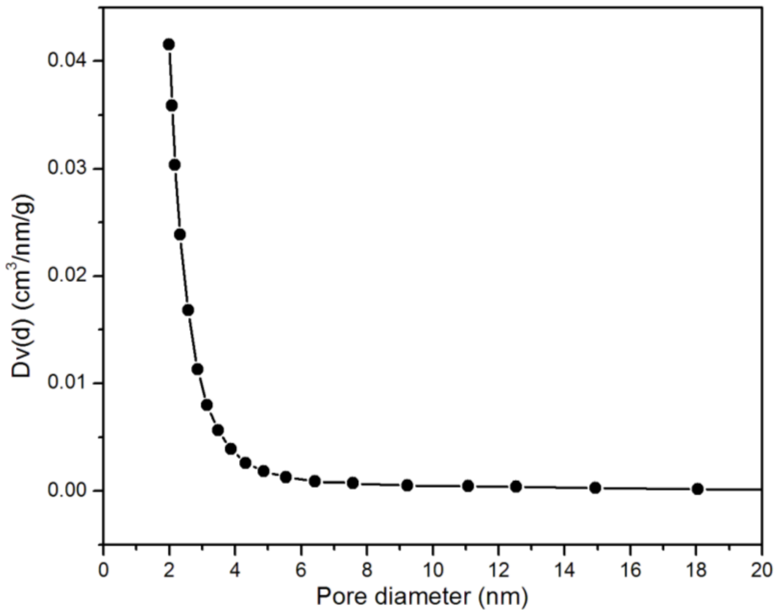

Fig. S3 Pore size distribution of activated framework (**1a)** determined from the N_2 adsorption isotherm.

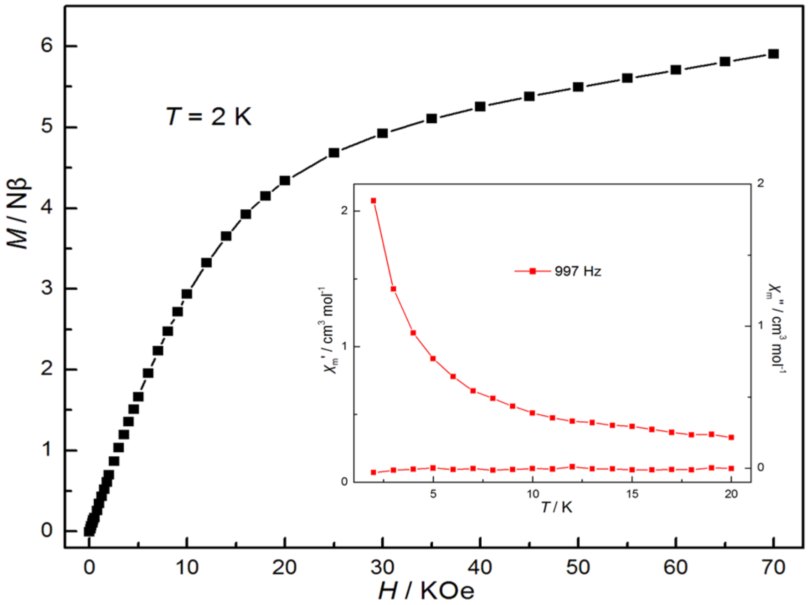

Fig. S4 Isothermal magnetization plot for **1** at 2 K. Insets: temperature-dependence of ac magnetic susceptibility under the zero static magnetic field.

Table S1 Local coordination environments of six octahedral Co(II) ions in complex **1**.

Coordinating atoms / Metal ions	μ_3-OH^-	O from $HCOO^-$	O from IN^-	N from IN^-
Co1	1	1	2	2
Co4	1	2	1	2
Co5	1	3	2	0
Co2, Co3, Co6	1	4	1	0

Table S2 Selected bond lengths (Å) and angles (˚) for **1**.

Co(1)–O(12)[a]	2.063(3)	O(2)–Co(2)–O(9)[e]	171.23(12)
Co(1)–O(2)[b]	2.081(3)	O(16)–Co(2)–O(9)[e]	77.01(11)
Co(1)–O(17)[c]	2.103(3)	O(8)[e]–Co(2)–O(9)[e]	89.08(11)
Co(1)–N(2)	2.126(4)	O(2)–Co(3)–O(15)	100.26(12)
Co(1)–N(1)	2.143(4)	O(2)–Co(3)–O(21)	90.64(13)
Co(1)–O(8)[d]	2.175(3)	O(15)–Co(3)–O(21)	168.40(14)
Co(2)–O(19)	2.038(3)	O(2)–Co(3)–O(14)	175.60(13)
Co(2)–O(18)[a]	2.071(3)	O(15)–Co(3)–O(14)	82.37(14)
Co(2)–O(2)	2.079(3)	O(21)–Co(3)–O(14)	86.52(15)
Co(2)–O(16)	2.094(3)	O(2)–Co(3)–O(11)[f]	92.99(11)
Co(2)–O(8)[e]	2.111(3)	O(15)–Co(3)–O(11)[f]	84.83(13)
Co(2)–O(9)[e]	2.137(3)	O(21)–Co(3)–O(11)[f]	90.68(13)
Co(3)–O(2)	2.065(3)	O(14)–Co(3)–O(11)[f]	83.69(12)
Co(3)–O(15)	2.078(3)	O(2)–Co(3)–O(20)	87.95(12)
Co(3)–O(21)	2.086(3)	O(15)–Co(3)–O(20)	94.37(12)
Co(3)–O(14)	2.102(3)	O(21)–Co(3)–O(20)	89.96(12)
Co(3)–O(11)[f]	2.104(3)	O(14)–Co(3)–O(20)	95.40(12)
Co(3)–O(20)	2.161(3)	O(11)[f]–Co(3)–O(20)	178.86(12)
Co(4)–O(1)	2.046(3)	O(1)–Co(4)–O(10)	90.48(11)
Co(4)–O(10)	2.119(3)	O(1)–Co(4)–O(4)[g]	94.88(11)
Co(4)–O(4)[g]	2.120(3)	O(10)–Co(4)–O(4)[g]	173.83(13)
Co(4)–N(3)	2.153(4)	O(1)–Co(4)–N(3)	94.57(12)
Co(4)–N(4)	2.155(4)	O(10)–Co(4)–N(3)	94.99(15)
Co(4)–O(13)	2.165(3)	O(4)[g]–Co(4)–N(3)	87.64(14)
Co(5)–O(3)[g]	2.026(3)	O(1)–Co(4)–N(4)	173.54(14)
Co(5)–O(22)	2.072(3)	O(10)–Co(4)–N(4)	84.65(14)
Co(5)–O(1)	2.092(3)	O(4)[g]–Co(4)–N(4)	89.78(14)
Co(5)–O(20)	2.107(3)	N(3)–Co(4)–N(4)	90.09(14)
Co(5)–O(5)	2.112(3)	O(1)–Co(4)–O(13)	79.34(11)
Co(5)–O(13)	2.130(3)	O(10)–Co(4)–O(13)	93.26(13)
Co(6)–O(6)	2.053(3)	O(4)[g]–Co(4)–O(13)	84.75(12)
Co(6)–O(1)	2.061(3)	N(3)–Co(4)–O(13)	169.79(14)
Co(6)–O(9)	2.088(3)	N(4)–Co(4)–O(13)	96.67(13)
Co(6)–O(7)	2.093(3)	O(3)[g]–Co(5)–O(22)	175.41(13)
Co(6)–O(16)[h]	2.095(3)	O(3)[g]–Co(5)–O(1)	91.87(12)
Co(6)–O(22)	2.128(3)	O(22)–Co(5)–O(1)	83.55(12)
O(12)[a]–Co(1)–O(2)[b]	95.17(12)	O(3)[g]–Co(5)–O(20)	89.83(12)
O(12)[a]–Co(1)–O(17)[c]	174.54(13)	O(22)–Co(5)–O(20)	94.73(12)
O(2)[b]–Co(1)–O(17)[c]	88.68(12)	O(1)–Co(5)–O(20)	176.52(12)
O(12)[a]–Co(1)–N(2)	88.55(13)	O(3)[g]–Co(5)–O(5)	90.34(13)
O(2)[b]–Co(1)–N(2)	170.72(13)	O(22)–Co(5)–O(5)	90.14(13)
O(17)[c]–Co(1)–N(2)	87.07(13)	O(1)–Co(5)–O(5)	92.46(11)

O(12)[a]–Co(1)–N(1)	96.50(15)	O(20)–Co(5)–O(5)	90.57(12)
O(2)[b]–Co(1)–N(1)	97.03(13)	O(3)[g]–Co(5)–O(13)	90.70(12)
O(17)[c]–Co(1)–N(1)	86.85(14)	O(22)–Co(5)–O(13)	88.17(12)
N(2)–Co(1)–N(1)	90.98(15)	O(1)–Co(5)–O(13)	79.16(11)
O(12)[a]–Co(1)–O(8)[d]	89.23(13)	O(20)–Co(5)–O(13)	97.78(12)
O(2)[b]–Co(1)–O(8)[d]	80.59(11)	O(5)–Co(5)–O(13)	171.59(12)
O(17)[c]–Co(1)–O(8)[d]	87.58(12)	O(6)–Co(6)–O(1)	89.13(12)
N(2)–Co(1)–O(8)[d]	90.97(13)	O(6)–Co(6)–O(9)	170.07(12)
N(1)–Co(1)–O(8)[d]	174.00(14)	O(1)–Co(6)–O(9)	100.79(11)
O(19)–Co(2)–O(18)[a]	91.82(13)	O(6)–Co(6)–O(7)	87.16(13)
O(19)–Co(2)–O(2)	92.61(12)	O(1)–Co(6)–O(7)	97.66(12)
O(18)[a]–Co(2)–O(2)	91.75(11)	O(9)–Co(6)–O(7)	91.75(12)
O(19)–Co(2)–O(16)	90.64(12)	O(6)–Co(6)–O(16)[h]	92.03(12)
O(18)[a]–Co(2)–O(16)	165.56(12)	O(1)–Co(6)–O(16)[h]	174.86(12)
O(2)–Co(2)–O(16)	102.36(11)	O(9)–Co(6)–O(16)[h]	78.06(11)
O(19)–Co(2)–O(8)[e]	172.45(13)	O(7)–Co(6)–O(16)[h]	87.40(12)
O(18)[a]–Co(2)–O(8)[e]	93.77(13)	O(6)–Co(6)–O(22)	89.51(13)
O(2)–Co(2)–O(8)[e]	82.15(11)	O(1)–Co(6)–O(22)	82.94(11)
O(16)–Co(2)–O(8)[e]	85.20(12)	O(9)–Co(6)–O(22)	91.42(12)
O(19)–Co(2)–O(9)[e]	96.14(12)	O(7)–Co(6)–O(22)	176.60(14)
O(18)[a]–Co(2)–O(9)[e]	88.58(12)	O(16)[h]–Co(6)–O(22)	92.06(12)

Symmetry operators: [a] x + 1, y, z; [b] –x + 5/2, –y + 1, z – 1/2; [c] –x + 3/2, –y + 1, z – 1/2; [d] x + 1/2, –y + 1/2, –z; [e] –x + 2, y + 1/2, –z + 1/2; [f] –x + 3/2, –y + 1, z + 1/2; [g] x – 1/2, –y + 3/2, –z; [h] –x + 2, y – 1/2, –z + 1/2.