

Supporting information

Two water-bridged cobalt(II) chains with isomeric naphthoate spacers: from metamagnetic to single-chain magnetic behaviour

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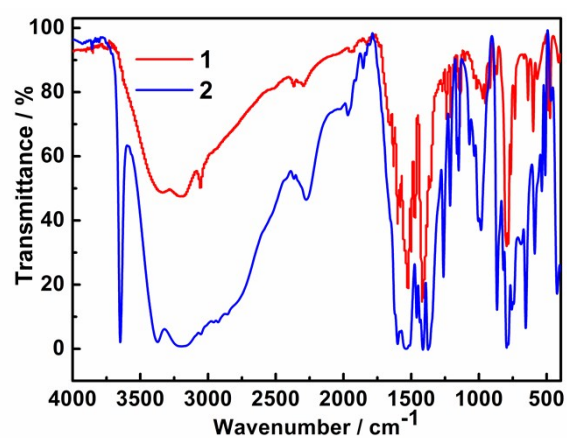


Fig. S1 FT-IR spectra of **1** and **2**.

Table S1 Hydrogen-bonding parameters (Å, °) for **2**^a

D–H···A	<i>d</i> (D–H)	<i>d</i> (H···A)	<i>d</i> (D···A)	∠(D–H···A)
O5–H5A···O4	0.850	1.802	2.637	166.95
O5–H5B···O1 ^{#1}	0.850	1.799	2.635	167.71
O6–H6B···O2 ^{#1}	0.850	1.847	2.696	176.60
O7–H7B···O3 ^{#1}	0.850	1.849	2.697	175.57
O8–H8B···O4	0.850	1.898	2.707	158.56
O7–H7A···O8 ^{#1}	0.850	1.865	2.707	170.65
O9–H9A···O1	0.850	1.880	2.694	159.92
O6–H6A···O9 ^{#1}	0.850	1.857	2.704	173.83

^a Symmetry codes: ^{#1} 3/2 – *x*, *y* – 1/2, 1/2 – *z*.

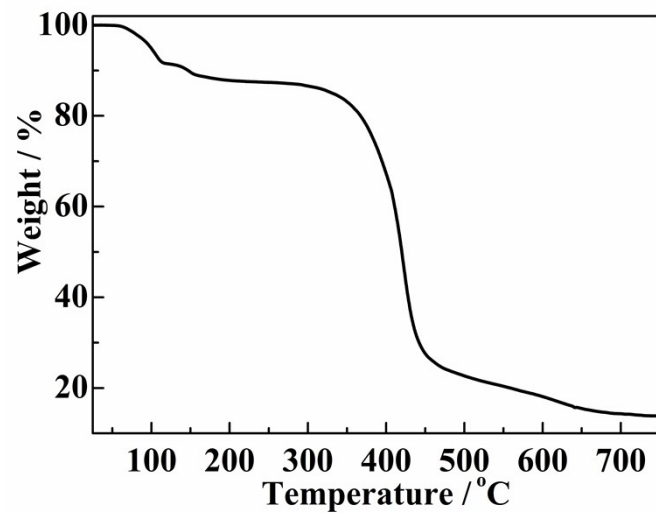


Fig. S2 TGA of 1.

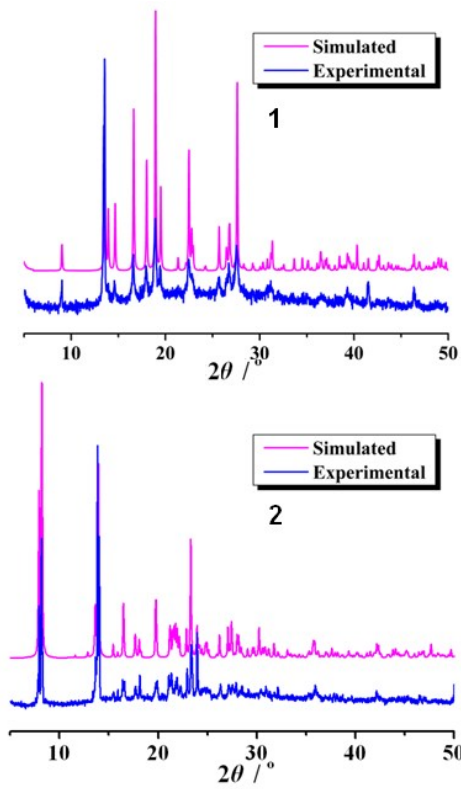


Fig. S3 Simulated (purple) and experimental (blue) PXRD patterns for **1** and **2**.

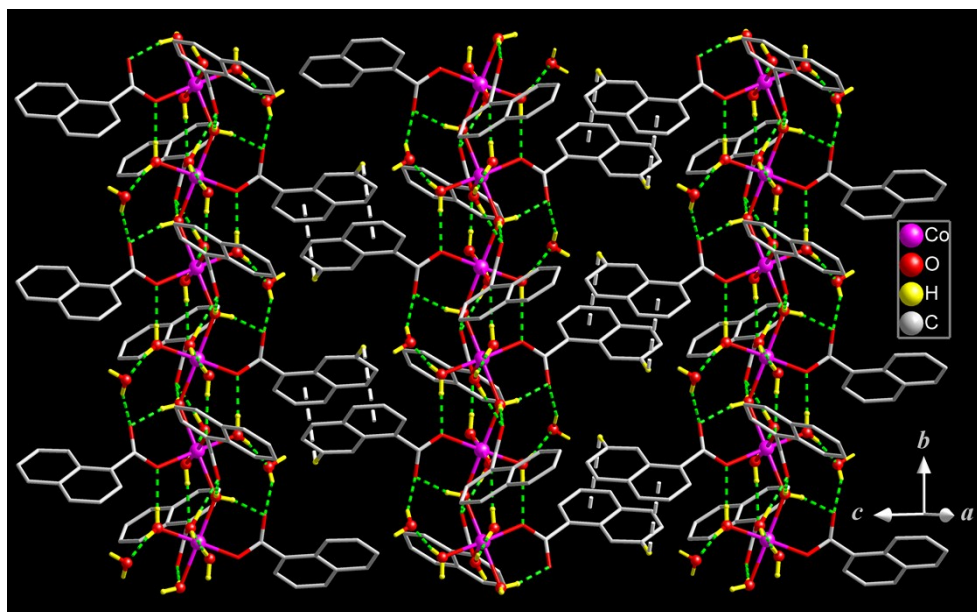


Fig. S4 2D network of **2** generated by hydrogen-bonding (green broken lines) and C–H $\cdots\pi$ interactions (white broken lines).

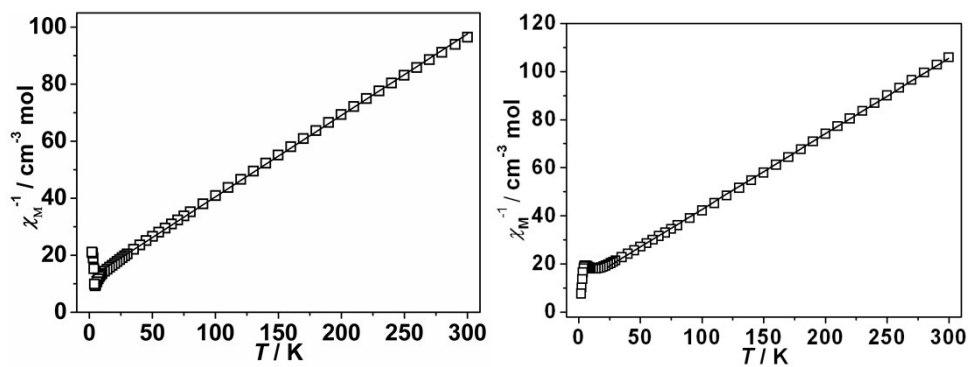


Fig. S5 Temperature dependence of χ_M^{-1} for **1** and **2** (Solid lines correspond to the Curie-Weiss fit).

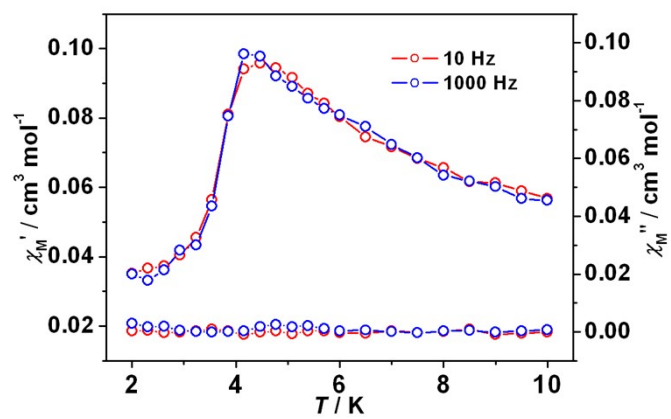


Fig. S6 Temperature dependence of ac susceptibilities for **1** at different frequencies (10 and 1000 Hz) under $H_{\text{ac}} = 3.5$ Oe and $H_{\text{dc}} = 0$ Oe.

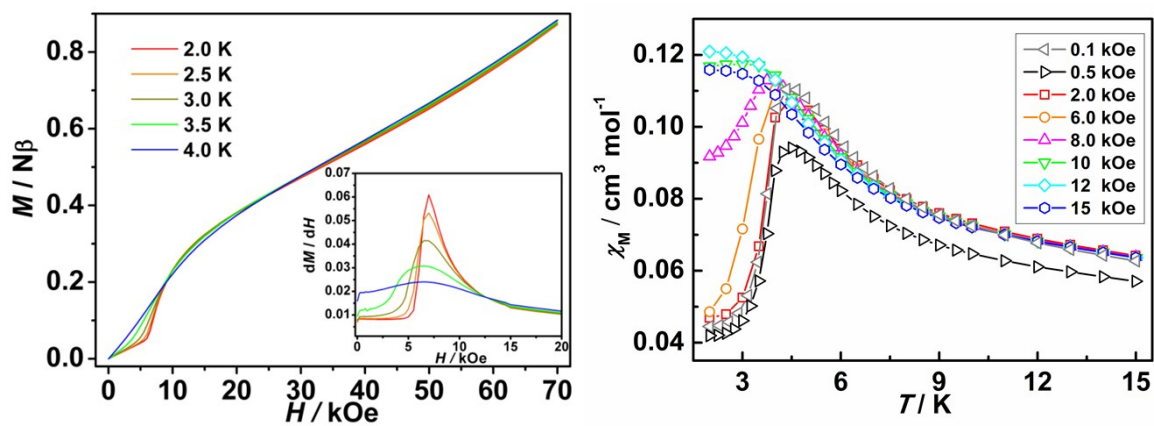


Fig. S7 (a) Field-dependent magnetizations measured at different temperatures for **1** (insert: dM/dH curves).
 (b) Temperature-dependent molar susceptibility for **1** collected at different fields.

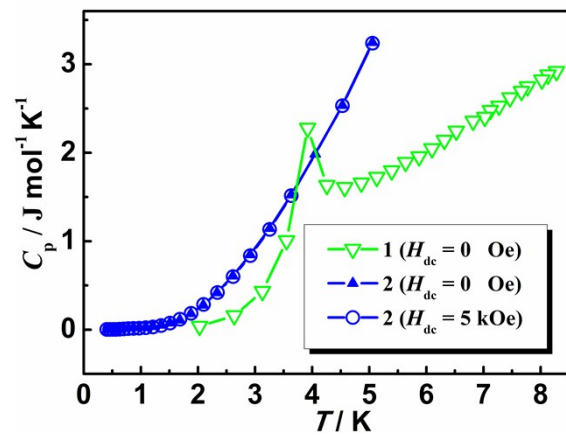


Fig. S8 Temperature-dependent heat capacity for **1** and **2** measured at different dc fields.

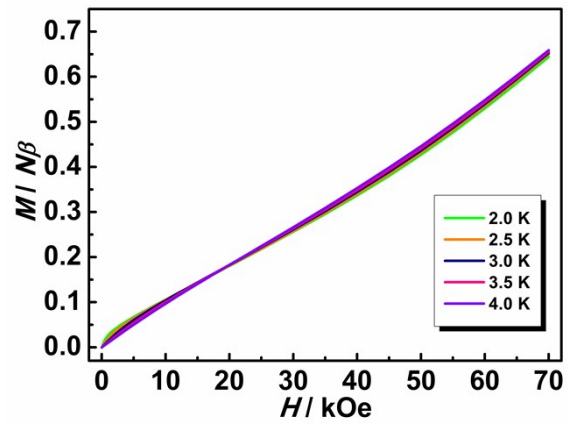


Fig. S9 Field-dependent magnetizations of **2** measured at different temperatures.

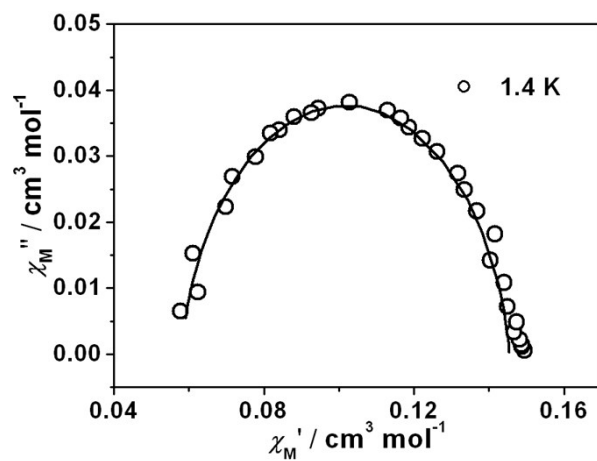


Fig. S10 Cole–Cole diagram of **2** at 1.4 K (The solid line represents the least-squares fit obtained with a Debye model).