

Figure S1. Simulated (blue) & experimental (red) XRPD data for **1** (a), **2** (b), **3** (c) and **4** (d).

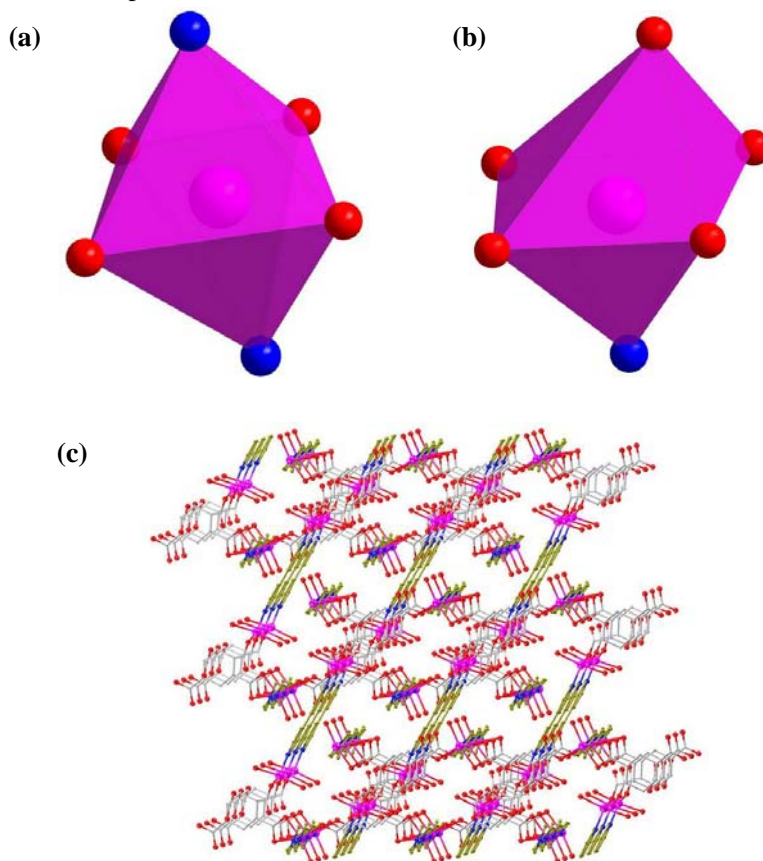


Figure S2. Views of Co1 (a) and Co2 (b) polyhedrons, and the 3D coordination network of **1** (c). (Co, purple; O, red; N, blue; C, grey and hydrogen atoms were omitted)

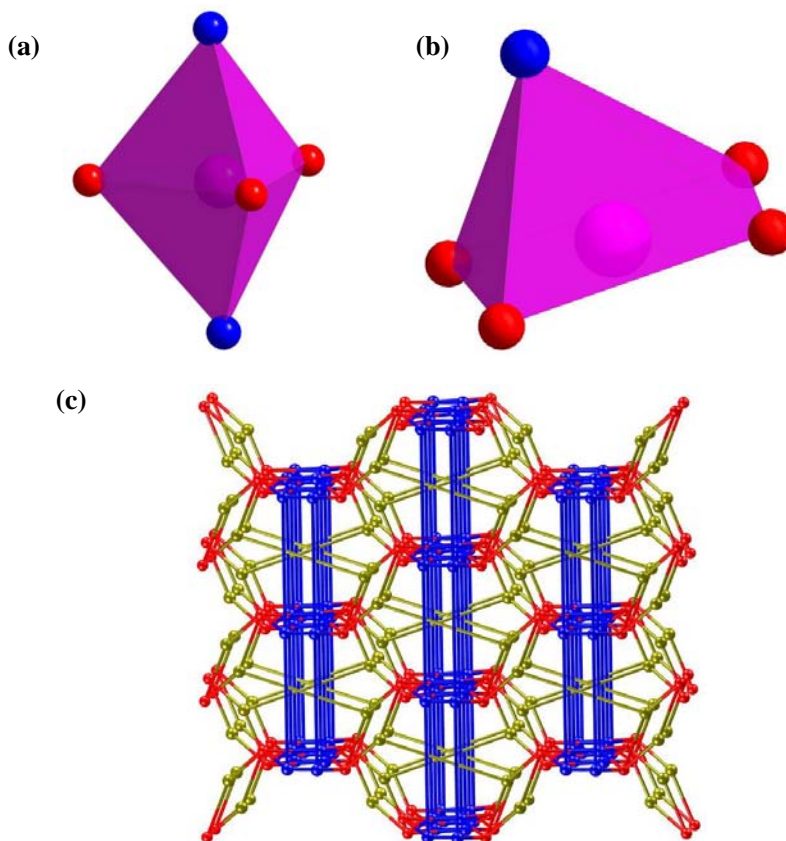


Figure S3. Polyhedron view of (a) Co1 and (b) Co2 atom of compound **2** (ball symbols are the same as **1**), and (c) Supplementary Material (ESI) for CrystEngComm
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stick graphic of the 3D coordination network (L^{IV} ligand: red nodes, Co1: blue and Co2: gold).

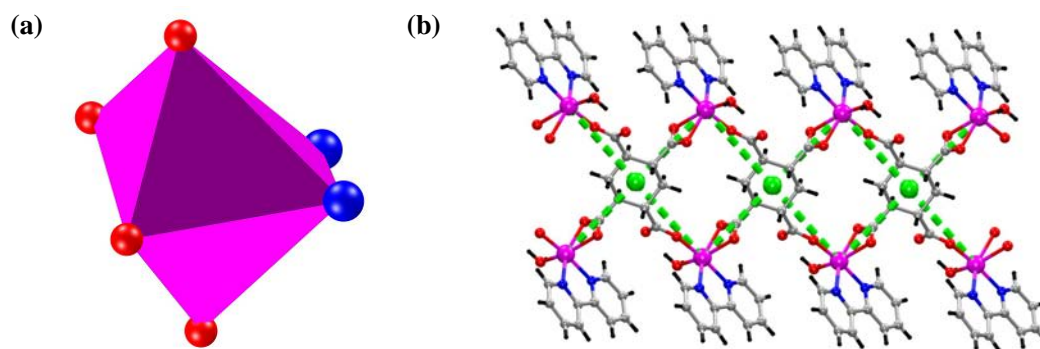


Figure S4. Polyhedron view of (a) Co1 atom of compound **3**, and (c) stick graphic of the 1D tape. (ball symbols are the same as **1**)

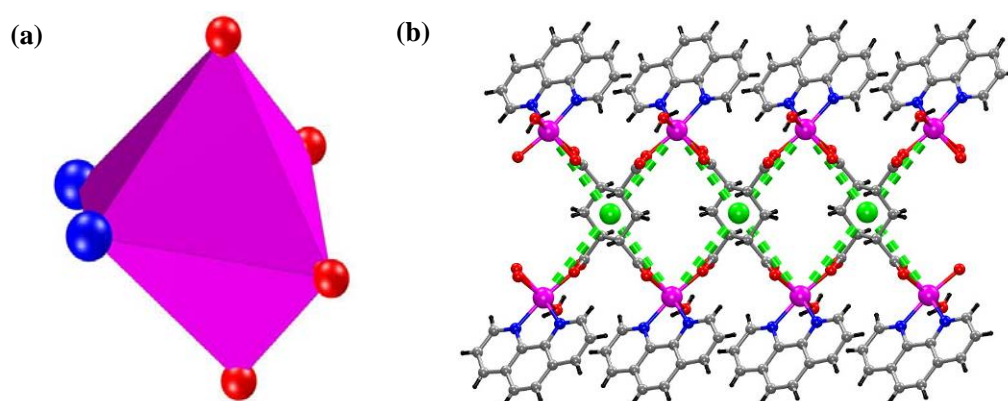


Figure S5. Polyhedron view of (a) Co1 atom of compound **4**, and (c) stick graphic of the 1D tape. (ball symbols are the same as **1**)

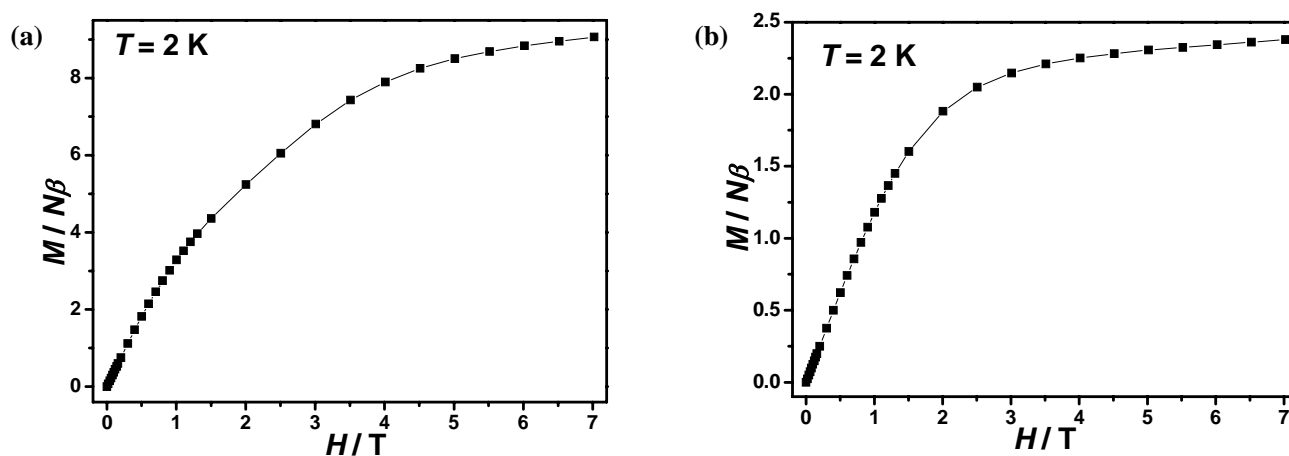


Figure S6. The magnetization at 2 K of **2** (a) and **3** (b).