

**Diverse mixed-ligand metal complexes with *in situ* generated
5-(pyrazinyl)tetrazolate chelating-bridging ligand: *in situ* synthesis, crystal
structures, magnetic, and luminescent properties**

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Table S1. Selected Hydrogen Bond Lengths (Å) and Bond Angles (°) ^a

D–H···A	<i>d</i> (D–H)	<i>d</i> (H···A)	<i>d</i> (D···A)	∠DHA
2				
O4–H4···O2 ^{#1}	0.820	1.870	2.683(2)	171.42
O5–H5A···N6 ^{#2}	0.850	2.093	2.899(2)	158.02
O5–H5B···O2 ^{#3}	0.850	2.134	2.971(3)	168.30
4				
O1–H1A···N12 ^{#1}	0.849	2.297	3.046(1)	147.29
5				
O1–H1A···N4 ^{#1}	0.850	2.008	2.791(7)	152.78
O1–H1B···N2 ^{#2}	0.850	2.116	2.887(0)	150.60
7				
O1–H1B···I1 ^{#1}	0.851	2.834	3.670(9)	168.15
O1–H1A···N4 ^{#2}	0.851	1.937	2.779(9)	170.39
8				
O1–H1A···N6 ^{#1}	0.850	2.040	2.833(2)	155.03
O1–H1B···N4 ^{#2}	0.850	2.041	2.837(3)	155.55
O2–H2A···N3 ^{#3}	0.850	2.345	3.173(4)	164.81
O2–H2B···O1 ^{#2}	0.850	2.535	3.055(2)	120.51
O2–H2B···N1 ^{#2}	0.850	2.663	3.399(1)	145.64
9				
O1–H1A···N6 ^{#1}	0.850	1.992	2.841(7)	179.20
O1–H1B···N4 ^{#2}	0.850	1.991	2.824(9)	166.51
O2–H2A···O1 ^{#2}	0.851	2.225	3.053(4)	164.66

Symmetry Codes for **2**: #1 $-x + 2, -y + 1, -z + 1$, #2 $x, y + 1, z$, #3 $x - 1, y, z$, for **4**: #1 $-x + 1, y + 1/2, -z + 1/2$, for **5**: #1 $-x + 1, y + 1/2, -z + 1/2$, #2 $x - 1, y, z$; for **7**: #1 $-x + 1, -y + 1/2, -z + 1/2$, #2 $x + 1, y, z$, for **8**: #1 $-x + 1/2, y - 1/2, -z + 1/2$, #2 $x + 1/2, -y + 3/2, z + 1/2$, #3 $x + 1, y, z + 1$, for **9**: #1 $-x + 1, y - 1/2, -z + 1/2$, #2 $x, -y + 1/2, z - 1/2$.

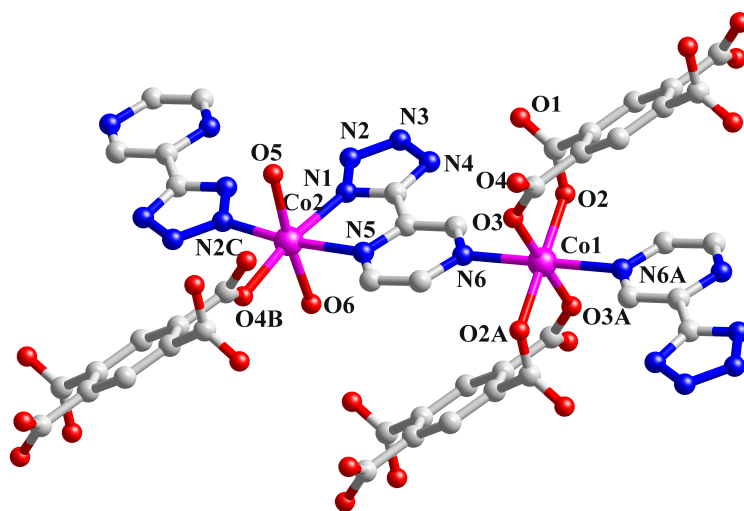


Figure S1. Local coordination environments of the Co^{II} ions in **1**.

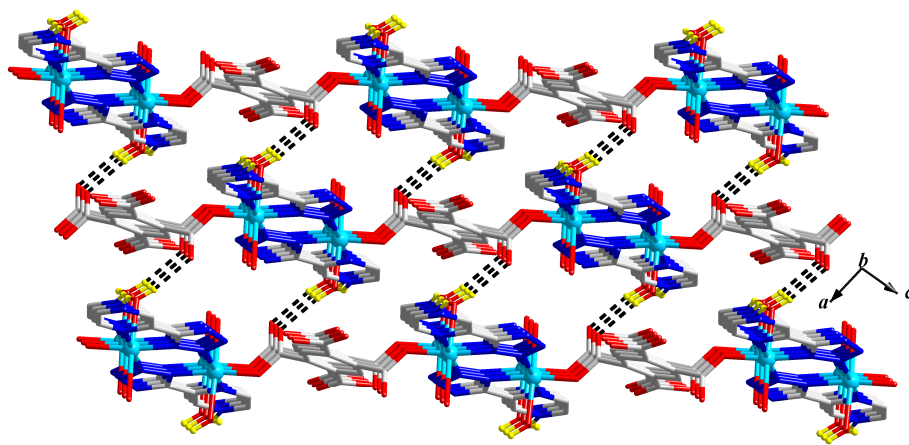


Figure S2. 3D supramolecular network of **2**.

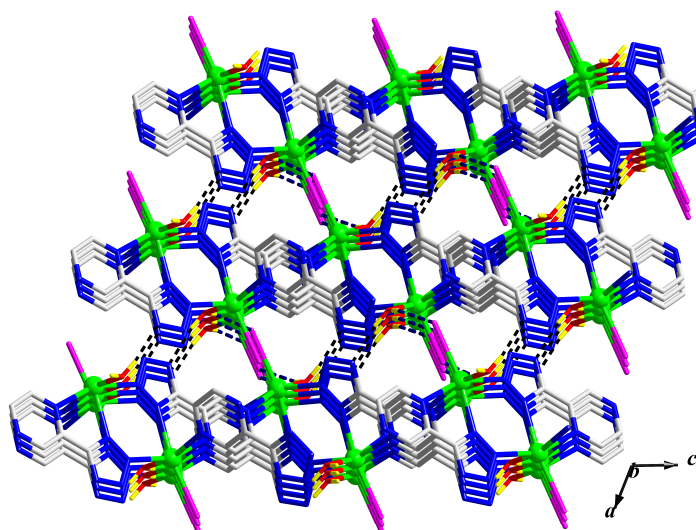


Figure S3. 3D supramolecular framework of **7**.

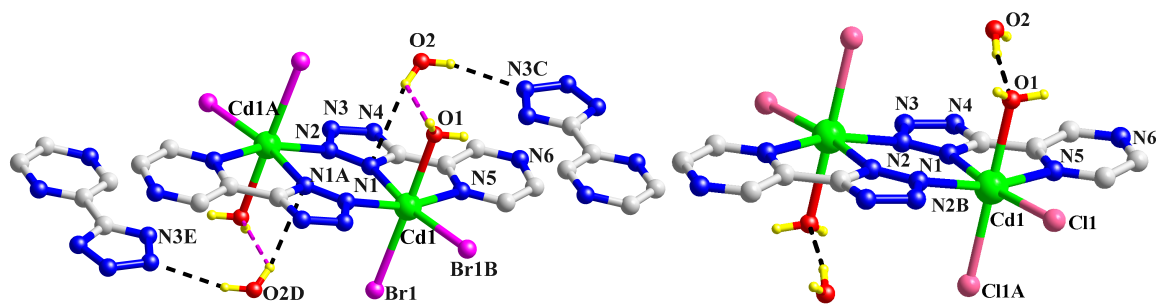


Figure S4. Local hydrogen-bonding interactions between the lattice water molecules and covalent chain of **8** (left) and **9** (right).

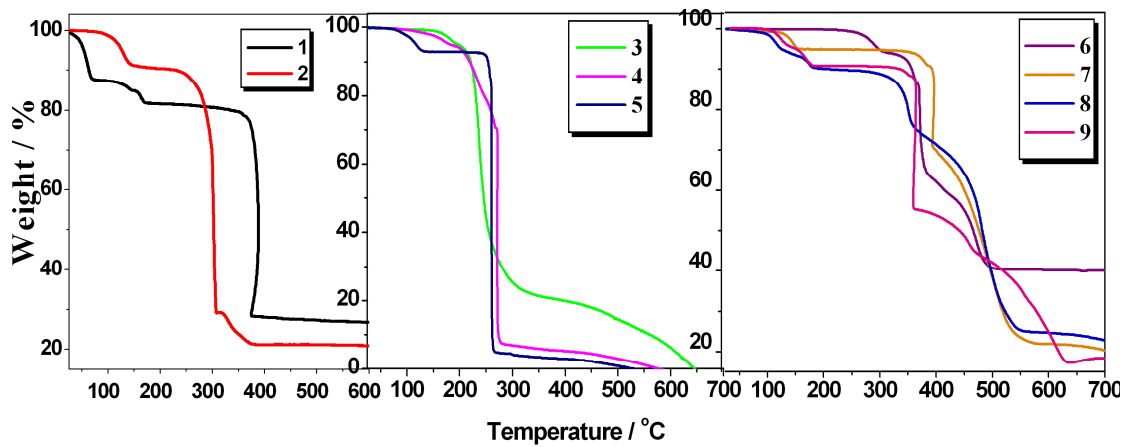


Figure S5. TG curves for complexes 1 – 9.