Supporting Information:

Relative quantum yield measurement:

The quantum yields of sensor H_3L^1 in Tris–HCl buffer solution (pH = 7.13, EtOH/H_2O = 8:2 v/v) were determined according to the following equation: $\Phi_X = (\Phi_R \times F_X \times A_R)/(F_R \times A_X)$. Where Φ is quantum yield; F is integrated area under the corrected emission spectra; A is absorbance at the excitation wavelength; the subscripts X and R refer to the unknown and the standard, respectively. Coumarin 153 in Tris–HCl buffer solution (pH = 7.13, EtOH/H_2O = 8:2 v/v) was used as the standard, which has a quantum yield of 0.64. The quantum yield value of H_2L^2 change from 0.00297 to 0.01728 after the addition of Zn^{2+} ion in ethanol.

(1) J. Olmsted, *J. Phys. Chem.*, 1979, **83**, 2581-2584

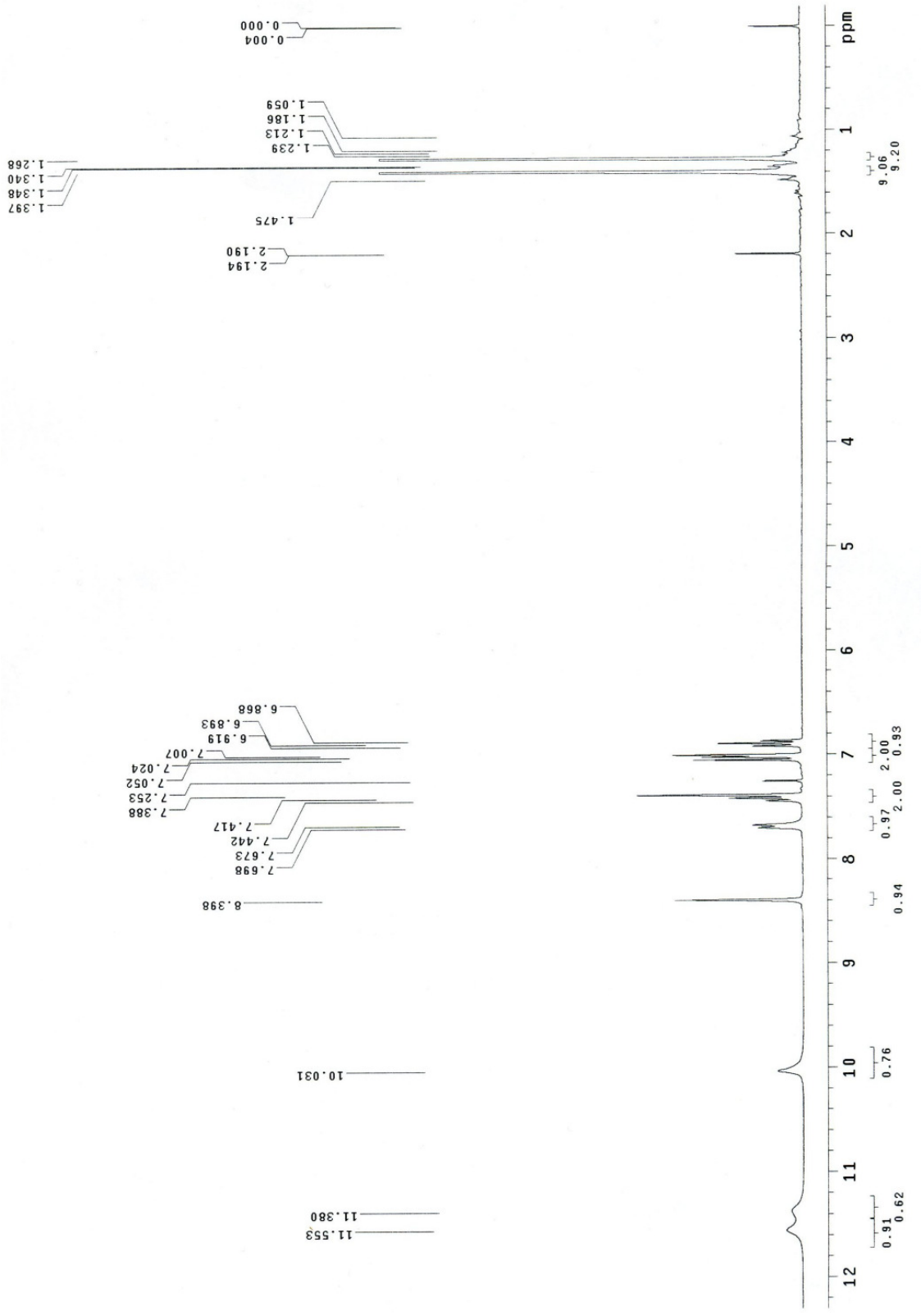

Fig. S1. ^{1}H NMR chart of H_3L^1 in $CDCl_3$ (300 MHz)

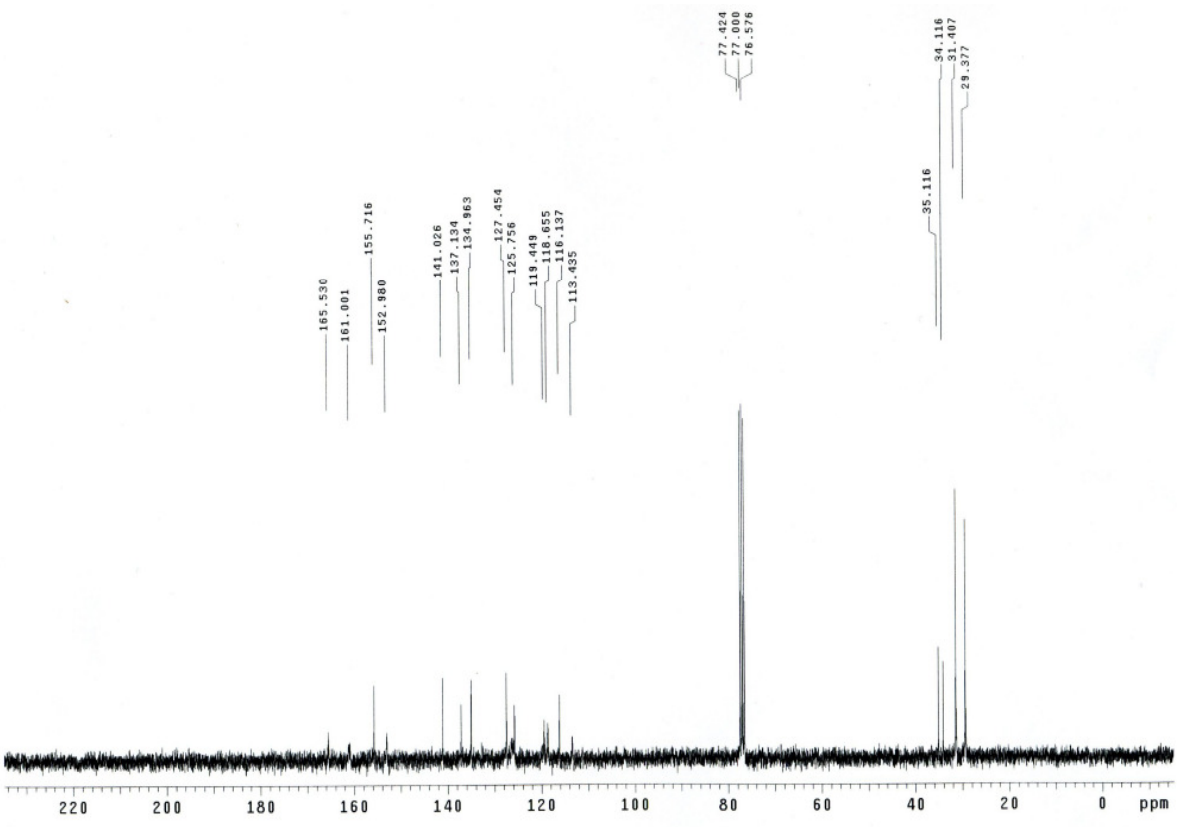

Fig. S2. ^{13}C NMR chart of H_3L^1 in $CDCl_3$ (300 MHz)

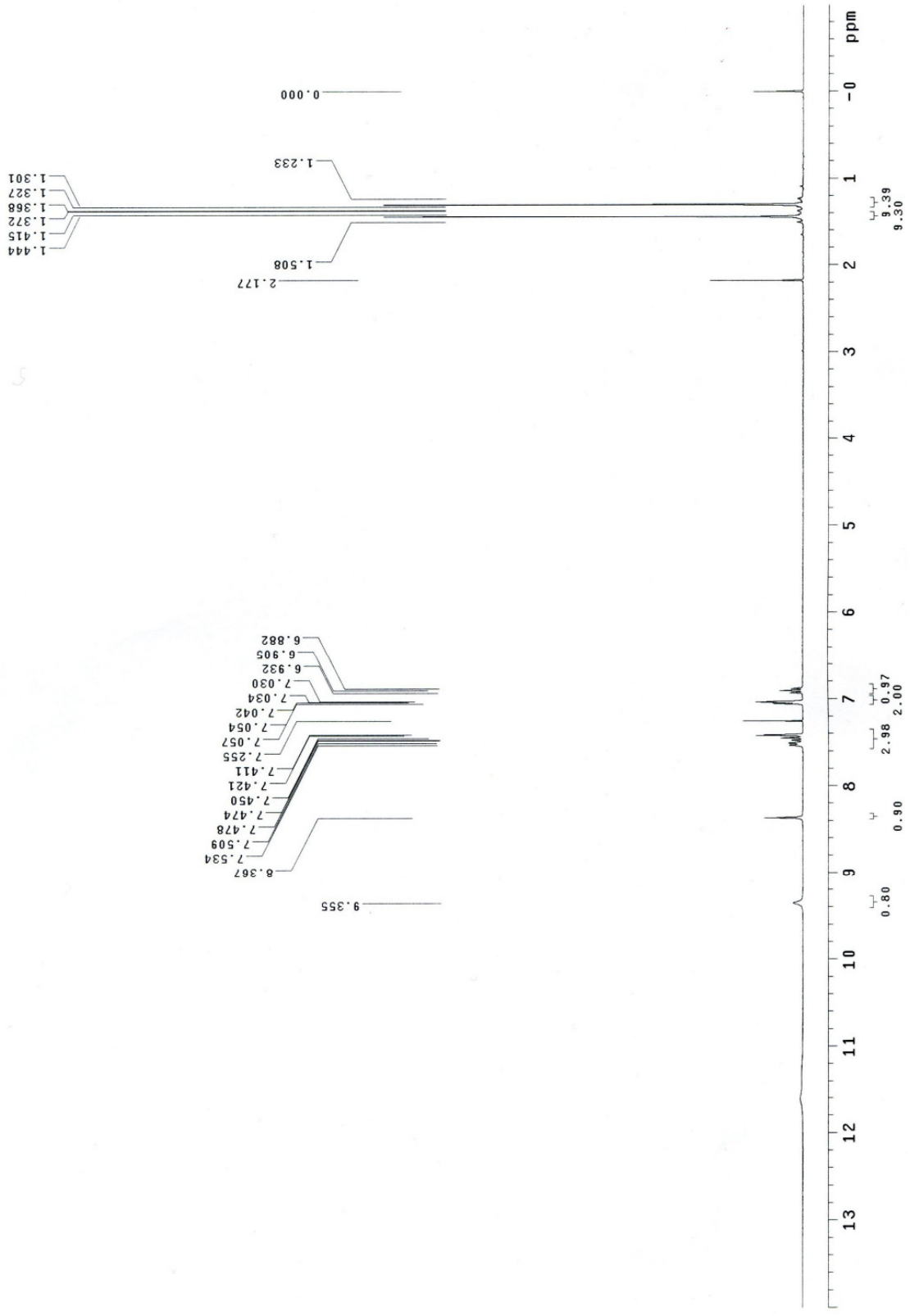

Fig. S3. ^{1}H NMR chart of H_2L^2 in DMSO-d_6 (300 MHz)

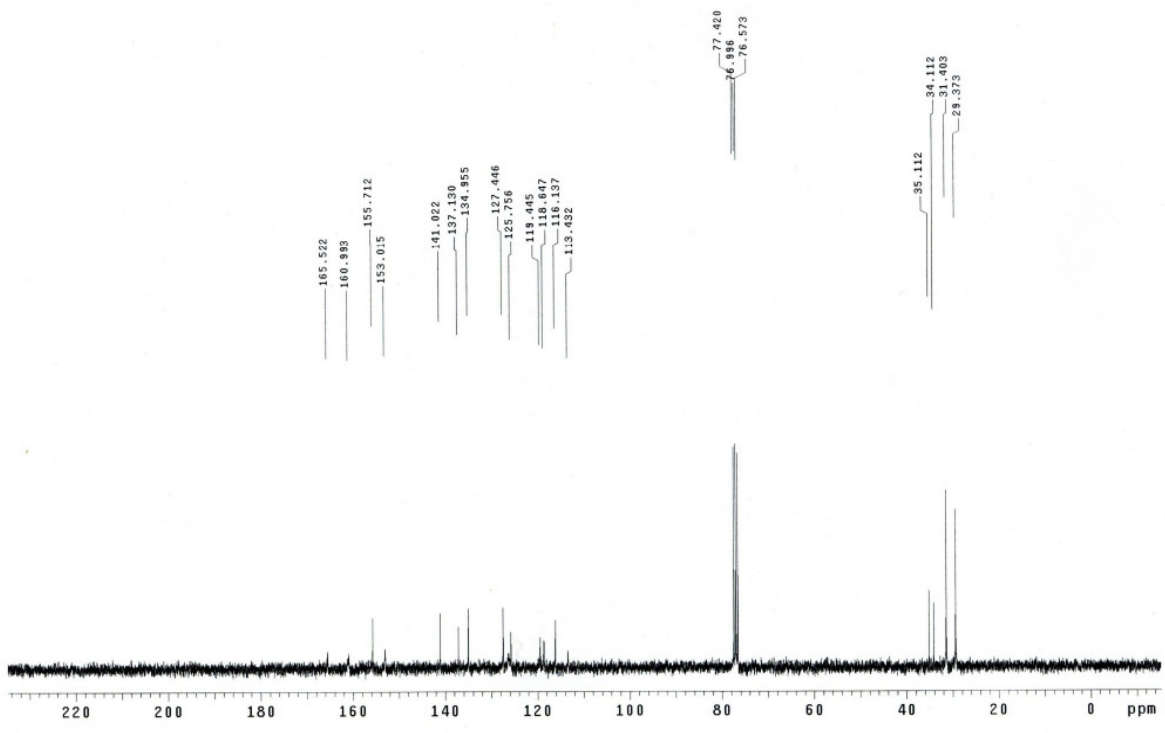

Fig. S4. ^{13}**C NMR chart of** H_2L^2 **in DMSO-d$_6$ (300 MHz)**

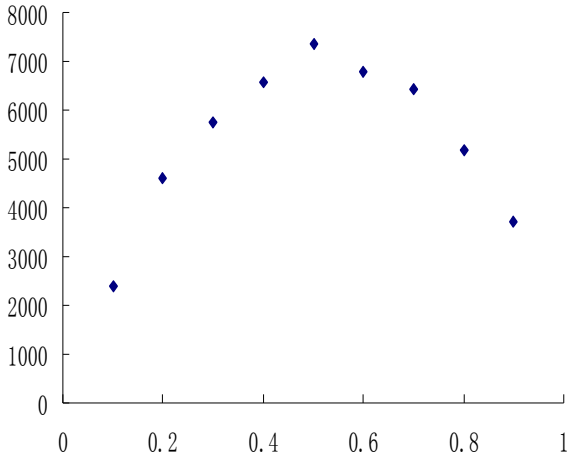

Fig. S5. Job's plot for $\mathbf{H_3L^1}$ and Zn^{2+} indicating the formation of 1:1 complexes. The total $[Zn^{2+}] = 1.0 \times 10^{-5}$ M. Excitation wavelength was 336 nm.

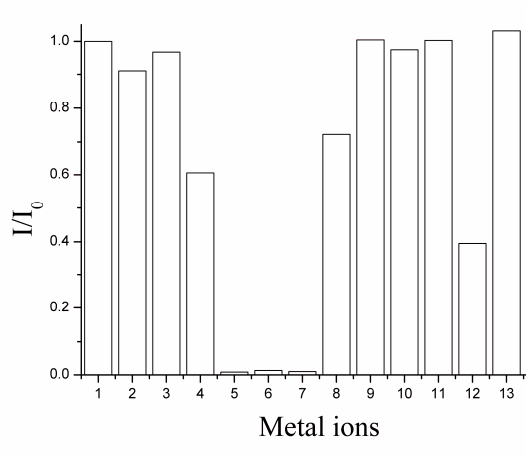

Fig. S6 Fluorescent emission changes of H_3L^1 + Zn^{2+} (1.0×10^{-5} mol L^{-1}) upon addition of 1, blank; 2, Ag^+; 3, Cd^{2+}; 4, Co^{2+}; 5, Cr^{3+}; 6, Cu^{2+}; 7, Fe^{3+}; 8, Hg^{2+}; 9, Li^+; 10, Mg^{2+}; 11, Mn^{2+}; 12, Ni^{2+}; 13, Ca^{2+} (10 equiv) in Tris–HCl buffer solution (pH = 7.13, EtOH/H_2O = 8:2 v/v) at room temperature. Excitation wavelength was 336 nm.

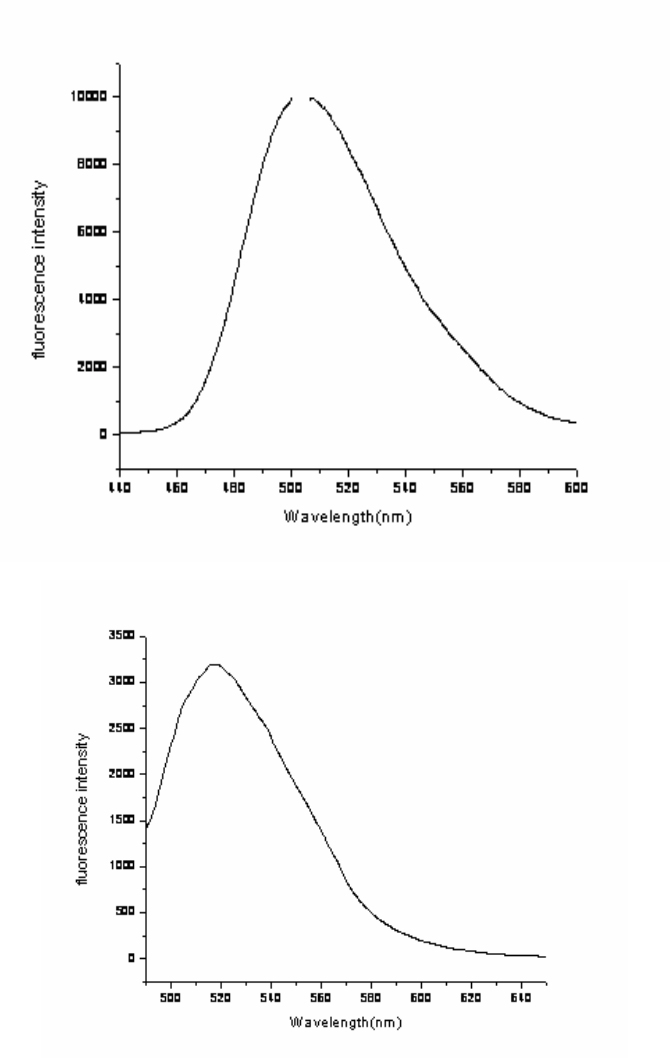

Fig. S7. Room-temperature emission spectrum for Zn^{2+} complex of ligand $\mathbf{H_3L^1}$ and $\mathbf{H_2L^2}$ excited at 421 nm (excitation and emission passes = 2.5 nm).

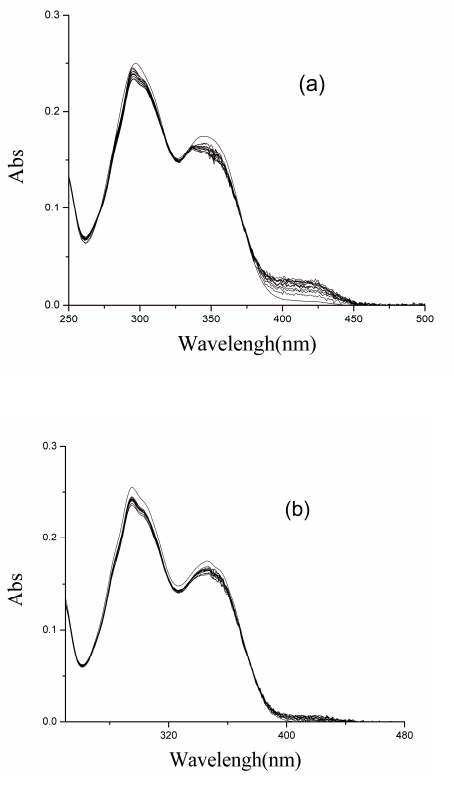

Fig. S8. UV–vis spectra changes of $\mathbf{H_3L^1}$ (10 μM) upon addition of Mg^{2+} (a) and Cd^{2+} (b) in Tris–HCl buffer solution (pH = 7.13, EtOH/H_2O = 8:2 v/v) at room temperature. ([M^{2+}] = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 μM)

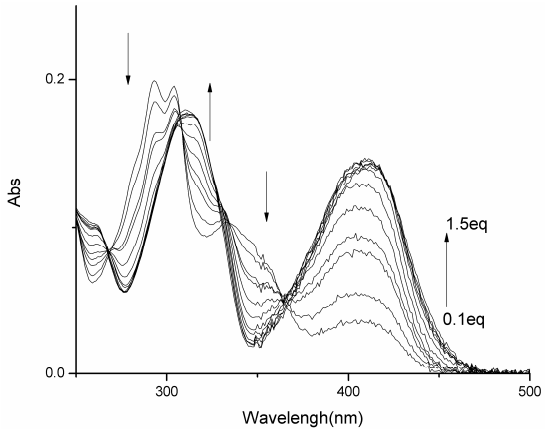

Fig. S9 UV-vis spectra changes of $\mathbf{H_2L^2}$ (10 μM) upon addition of Zn^{2+} in ethanol at room temperature. ([Zn^{2+}] = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 μM)

Table S1. Selected Bond Distances (Å) and Angles (deg) for [Zn($\mathbf{HL^1}$)C_2H_5OH]$_\infty$ **(1)**, [Cu($\mathbf{HL^1}$)(H_2O)]·CH_3OH **(2)**,

		[Cu($\mathbf{HL^1}$)(H_2O)]·CH_3OH
Zn1-O2 1.924(9)	Zn2-O5(#1) 1.945(9)	Cu1-O3 1.854(3)
Zn1-O6 1.965(8)	Zn2-O3 1.955(9)	Cu1-N2 1.898(3)
Zn1-O7 2.025(10)	Zn2-O8 2.025(13)	Cu1-O1 1.953(3)
Zn1-N4 2.054(11)	Zn2-N2 2.067(12)	Cu1-O4 1.984(3)
Zn1-O4 2.197(10)	Zn2-O1 2.249(11)	
O2-Zn1-O6 103.8(4)	O5(#1)-Zn2-O3	O3-Cu1-N2 94.10(13)
O2-Zn1-O7 104.1(4)	O5(#1)-Zn2-O8 104.9(4)	O3-Cu1-O1 173.21(13)
O6-Zn1-O7 109.6(4)	O3-Zn2 O8 106.5(5)	N2-Cu1-O1 81.78(12)
O2-Zn1-N4 149.2(4)	O5(#1)-Zn2-N2 147.0(4)	O3- Cu1-O4 90.80(12)
O6-Zn1-N4 85.0(4)	O3-Zn2-N2 85.6(4)	N2-Cu1-O4 166.71(13)
O7-Zn1-N4 100.3(4)	O8-Zn2-N2 102.2(5)	O1-Cu1-O4 94.40(11)
O2-Zn1-O4 83.2(4)	O5(#1)-Zn2-O1 81.7(4)	
O6-Zn1-O4 143.6(4)	O3-Zn2-O1 149.2(4)	
O7-Zn1-O4 102.8(5)	O8-Zn2-O1 100.9(5)	
N4-Zn1-O4 73.2(4)	N2-Zn2-O1 74.9(4)	

Symmetry transformations used to generate equivalent atoms: #1 = x, y-1, z

Table S2. Selected Bond Distances (Å) and Angles (deg) for $[Zn_2(\mathbf{HL^2})_2(CH_3COO)_2(C_2H_5OH)]$ (**3**), $[Co(\mathbf{L^2})_2][Co(DMF)_4(C_2H_5OH)(H_2O)]$ (**4**), $[Fe(\mathbf{HL^2})_2]Cl\cdot 2CH_3OH$ (**5**)

$[Zn_2(HL^2)_2(CH_3COO)_2(C_2H_5OH)]$		$[Co(L^2)_2][Co(DMF)_4(C_2H_5OH)(H_2O)]$	
Zn1-O1 1.956(2)	Zn2-O7 1.944(3)	Co1-O2 1.853(5)	Co1-N4 1.860(6)
Zn1-O5 1.989(2)	Zn2-O4 1.980(3)	Co1-O4 1.866(5)	Co1-N2 1.878(5)
Zn1-O3 2.020(2)	Zn2-O9 2.010(3)	Co1-O1 1.905(4)	Co1-O3 1.925(5)
Zn1-N1 2.051(3)	Zn2-N3 2.045(3)	Co2-O5 2.034(5)	Co2-O5A 2.034(5)
Zn1-O2 2.214(3)	Zn2-O8 2.150(3)	Co2-O8 2.043(6)	Co2-O7 2.095(13)
		Co2-O6 2.118(6)	Co2-O6A 2.118(6)
O1-Zn1-O5 97.79(10)	O7-Zn2-O4 106.20(12)	O2-Co1-N4 89.9(2)	O2-Co1-O4 90.5(2)
O1-Zn1-O3 103.38(11)	O7-Zn2-O9 97.39(11)	N4-Co1-O4 95.3(2)	O2-Co1-N2 94.3(2)
O5-Zn1-O3 103.40(10)	O4-Zn2-O9 108.50(13)	N4-Co1-N2 174.8(2)	O4-Co1-N2 87.9(2)
O1-Zn1-N1 87.67(10)	O7-Zn2-N3 88.77(12)	O2-Co1-O1 176.87(19)	N4-Co-O1 93.2(2)
O5-Zn1-N1 143.84(11)	O4-Zn2-N3 101.34(13)	O4-Co1-O1 88.89(19)	N2-Co1-O1 82.7(2)
O3-Zn1-N1 110.05(11)	O9-Zn2-N3 146.32(12)	O2-Co1-O3 89.6(2)	N4-Co1-O3 81.4(2)
O1-Zn1-O2 162.22(10)	O7-Zn2-O8 155.49(12)	O4-Co1-O3 176.69(19)	N2-Co1-O3 95.4(2)
O5-Zn1-O2 96.51(10)	O4-Zn2-O8 95.40(12)	O1-Co1-O3 91.20(19)	O5-Co2-O5A 178.2(4)
O3-Zn1-O2 83.44(10)	O9-Zn2-O8 86.31(10)	O5-Co2-O8 90.91(19)	O5A-Co2-O8 90.91(19)
N1-Zn1-O2 74.55(10)	N3-Zn2-O8 75.50(12)	O5-Co2-O7 89.09(19)	O5A-Co2-O7 89.09(19)
		O8-Co2-O7 180.00(18)	O5-Co2-O6 90.9(2)
		O5-Co2-O6 89.1(2)	O8-Co2-O6 88.22(19)
		O7-Co2-O6 91.78(19)	O5A-Co2-O6 89.1(2)
		O5A-Co2-O6 90.9(2)	O8-Co2-O6A 88.22(19)
		O7-Co2-O6A 91.78(19)	O6-Co2-O6A 176.4(4)

Symmetry transformations used to generate equivalent atoms: A = y, x, -z

Fe(1)-O(3) 1.872(2)	Fe(1)-O(1) 1.886(2)	Fe(1)-O(4) 2.040(2)
Fe(1)-O(2) 2.093(2)	Fe(1)-N(1) 2.106(3)	Fe(1)-N(3) 2.125(3)
O(3)-Fe(1)-O(1) 99.72(10)	O(3)-Fe(1)-O(4) 152.58(9)	O(1)-Fe(1)-O(4) 95.70(11)
O(3)-Fe(1)-O(2) 86.74(10)	O(1)-Fe(1)-O(2) 157.13(9)	O(4)-Fe(1)-O(2) 87.77(10)
O(3)-Fe(1)-N(1) 110.95(9)	O(1)-Fe(1)-N(1) 82.92(10)	O(4)-Fe(1)-N(1) 93.29(9)
O(2)-Fe(1)-N(1) 74.31(10)	O(3)-Fe(1)-N(3) 82.86(9)	O(1)-Fe(1)-N(3) 90.83(9)
O(4)-Fe(1)-N(3) 74.34(9)	O(2)-Fe(1)-N(3) 111.81(9)	N(1)-Fe(1)-N(3) 165.58(10)