

## **Supporting Information**

# **1,4-Bis(2-(pyridin-4-yl)vinyl)naphthalene and its Zinc(II) Coordination Polymers: Synthesis, Structural Characterization and Luminescent Selective Sensing of Mercury(II) ion**

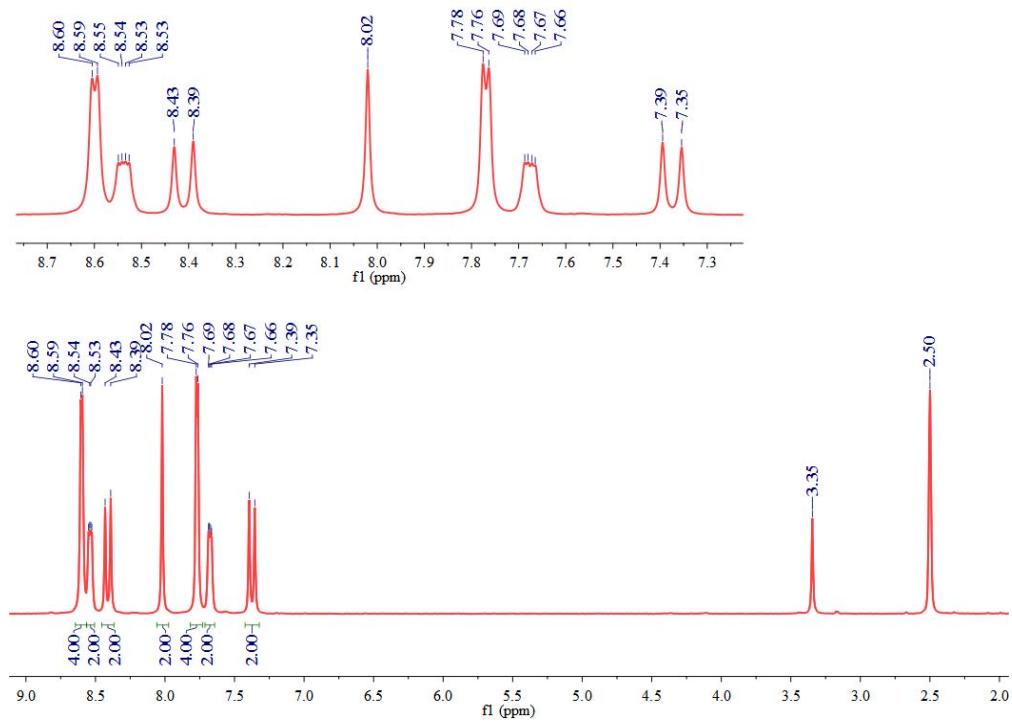
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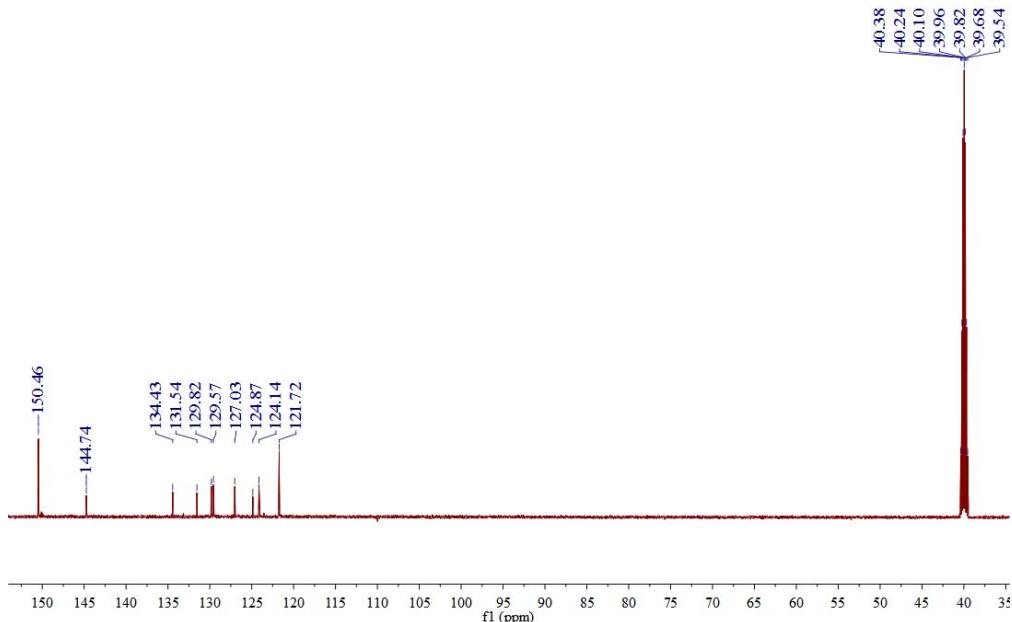
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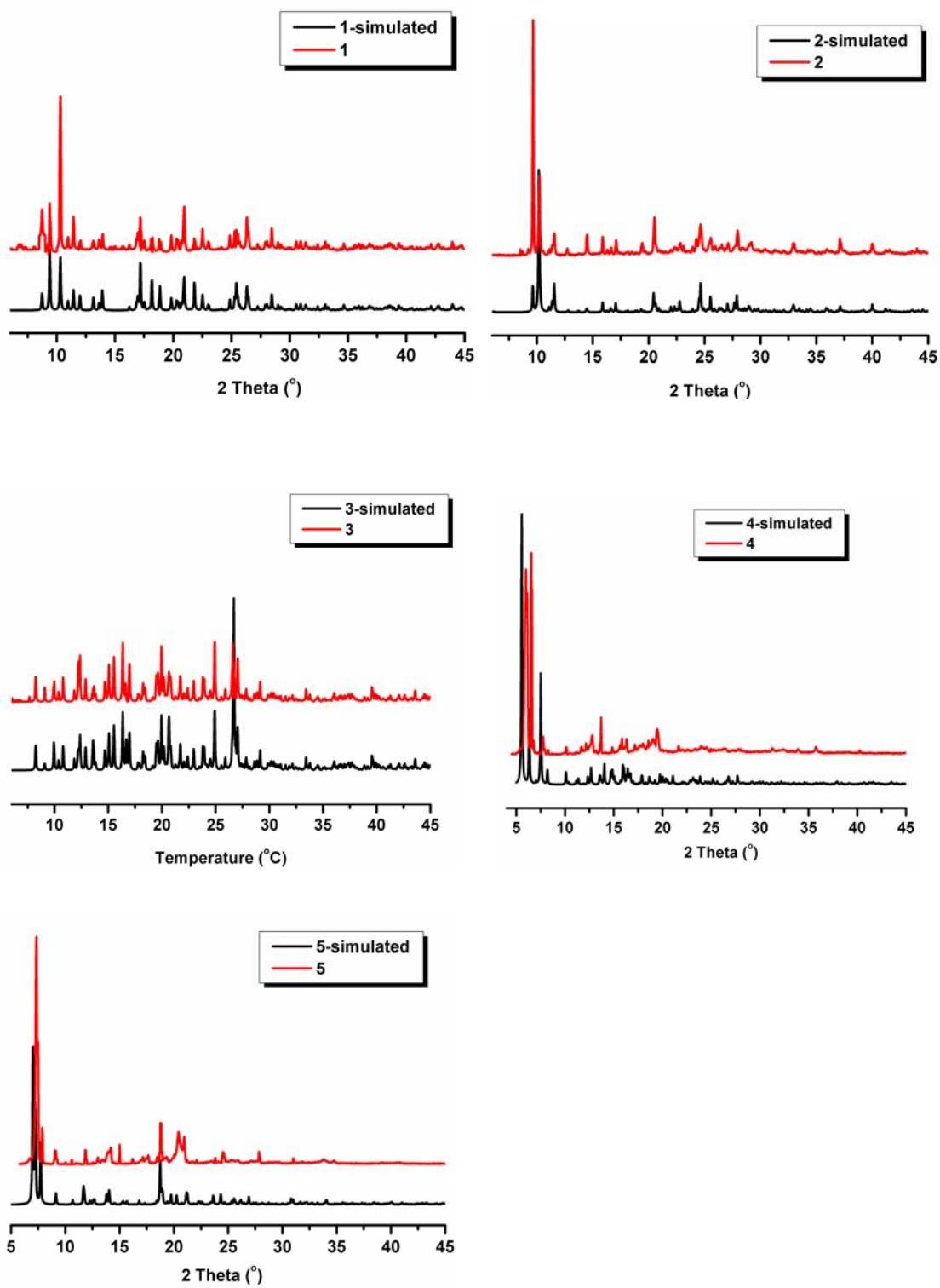
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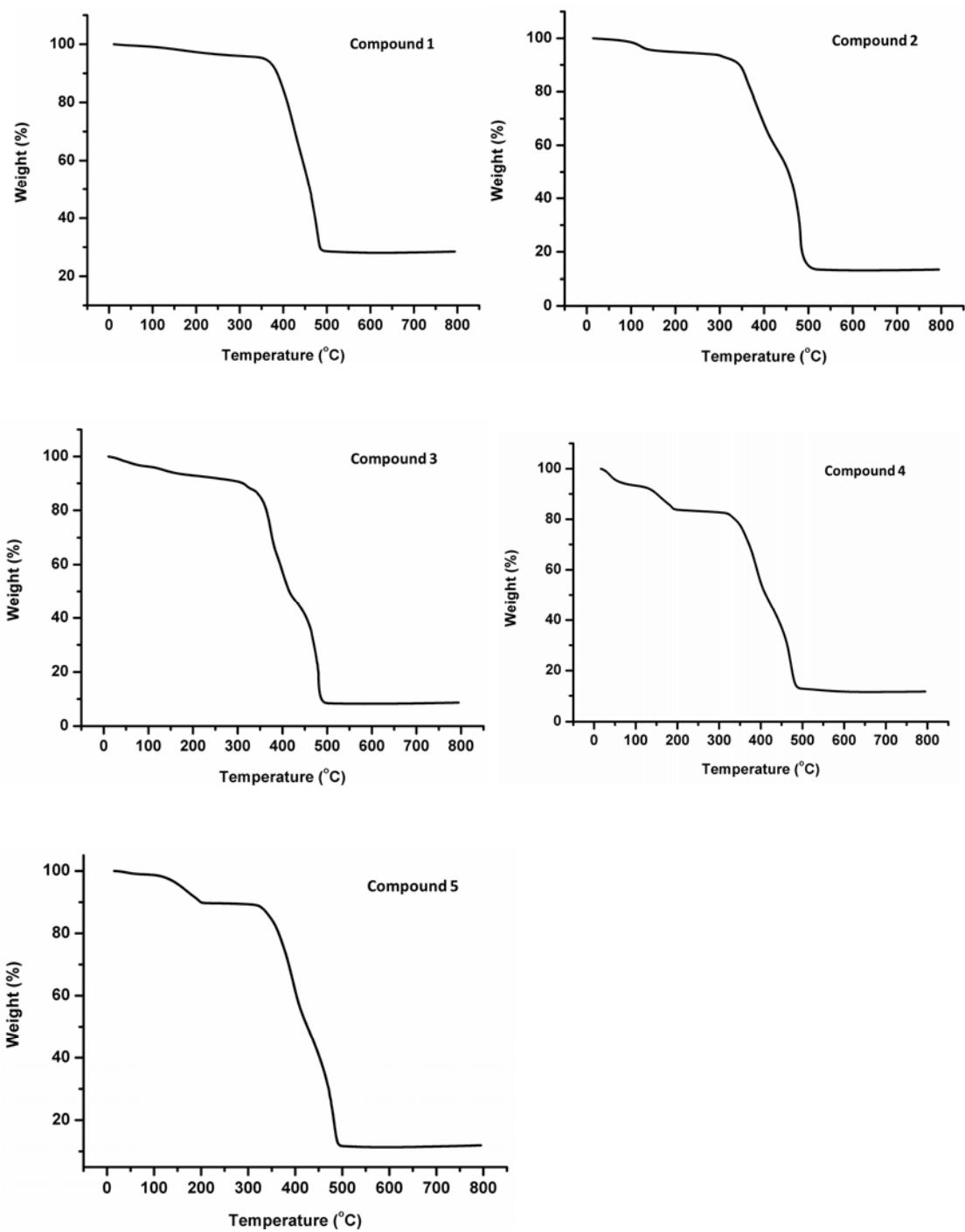
**Figure S1.** The  $^1\text{H}$  NMR spectrum of 1,4-bpyvna.



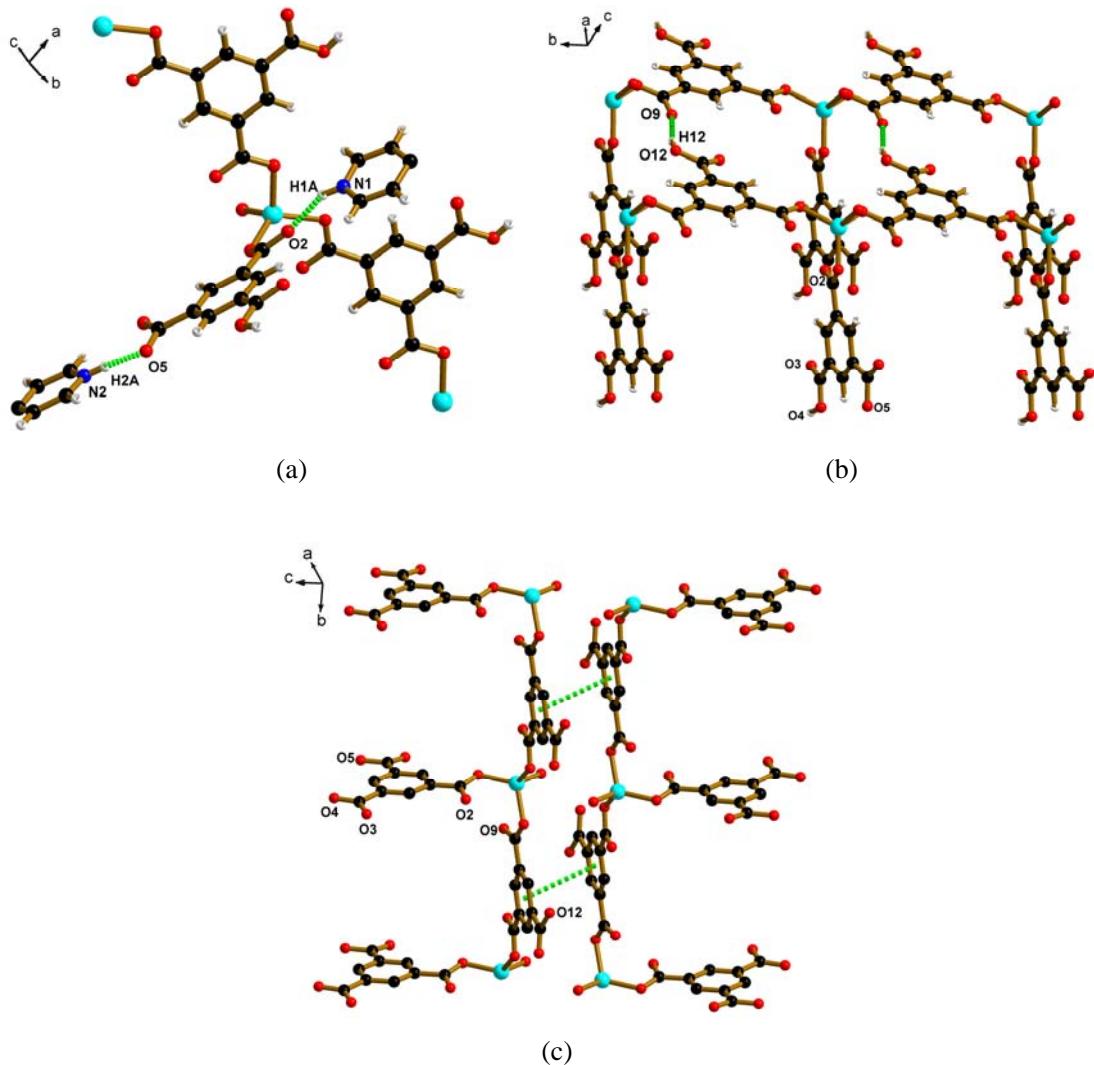
**Figure S2.** The  $^{13}\text{C}$  NMR spectrum of 1,4-bpyvna.



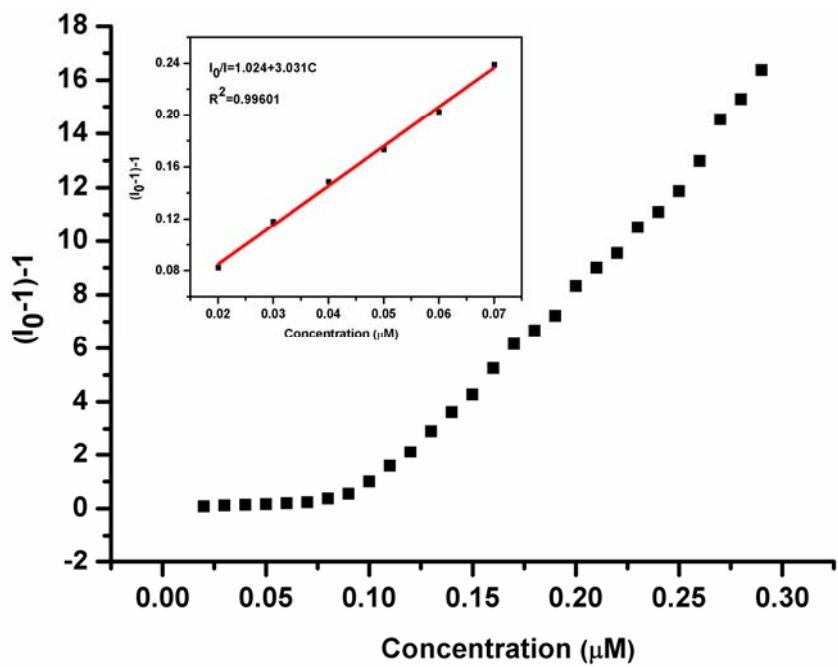
**Figure S3.** The PXRD patterns for **1-5**.



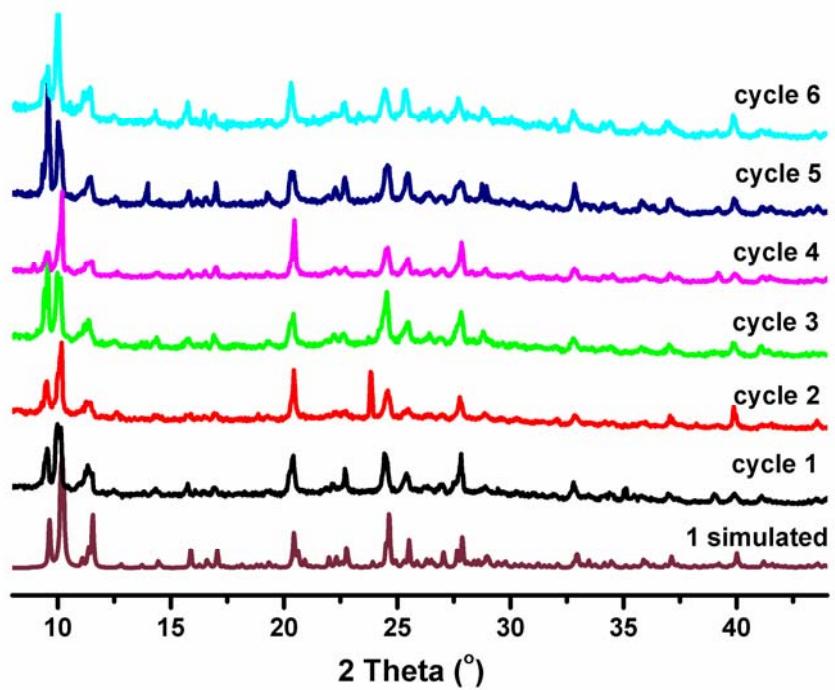
**Figure S4.** The TGA curves for 1-5.



**Figure S5.** The hydrogen bonding interactions in **3**.



**Figure S6.** Plot of the fluorescence intensities of 1,4-bpyvna in DMF at different  $\text{Hg}^{2+}$  concentrations.



**Figure S7.** The PXRD patterns for **2** after six cycles.

**Table S1.** Selected bond lengths ( $\text{\AA}$ ) and angles (deg) for **1-5**.

<i>[Zn<sub>2</sub>(1,4-bpyvna)(BTC)<sub>2</sub>(H<sub>2</sub>O)]<sub>n</sub> (1)</i>			
Zn(1)-O(1)	1.985(3)	Zn(1)-O(5)#1	2.007(4)
Zn(1)-O(7)	2.071(3)	Zn(1)-N(1)	2.087(4)
Zn(1)-O(10)#2	2.103(3)	Zn(2)-O(11)	1.921(3)
Zn(2)-O(9)#3	1.934(3)	Zn(2)-O(13)	1.957(4)
Zn(2)-O(6)#4	1.977(3)		
O(1)-Zn(1)-O(5)#1	152.30(17)	O(1)-Zn(1)-O(7)	89.75(14)
O(5)#1-Zn(1)-O(7)	90.36(16)	O(1)-Zn(1)-N(1)	105.08(17)
O(5)#1-Zn(1)-N(1)	102.63(16)	O(7)-Zn(1)-N(1)	89.71(14)
O(1)-Zn(1)-O(10)#2	88.26(15)	O(5)#1-Zn(1)-O(10)#2	89.63(16)
O(7)-Zn(1)-O(10)#2	175.69(14)	N(1)-Zn(1)-O(10)#2	94.49(14)
O(11)-Zn(2)-O(9)#3	118.26(15)	O(11)-Zn(2)-O(13)	105.0(2)
O(9)#3-Zn(2)-O(13)	106.82(18)	O(11)-Zn(2)-O(6)#4	100.12(15)
O(9)#3-Zn(2)-O(6)#4	113.82(15)	O(13)-Zn(2)-O(6)#4	112.57(17)

Symmetry transformations used to generate equivalent atoms: #1 x-1/2,y-1/2,z; #2 x,-y+1,z-1/2; #3 x,y-1,z; #4 x-1/2,-y+1/2,z+1/2; #5 x+1/2,y+1/2,z; #6 x+1/2,-y+1/2,z-1/2; #7 x,y+1,z; #8 x,-y+1,z+1/2

<b>2</b>			
Zn(1)-O(3)#1	1.922(3)	Zn(1)-O(2W)	1.958(3)
Zn(1)-O(1)	1.968(3)	Zn(1)-N(2)	2.018(4)
Zn(2)-O(5)	1.972(3)	Zn(2)-O(2W)#2	1.994(3)
Zn(2)-O(2)#3	2.014(3)	Zn(2)-N(1)#4	2.117(4)
Zn(2)-O(2W)#3	2.201(3)		
O(3)#1-Zn(1)-O(2W)	110.47(14)	O(3)#1-Zn(1)-O(1)	115.62(15)
O(2W)-Zn(1)-O(1)	108.45(13)	O(3)#1-Zn(1)-N(2)	105.33(14)
O(2W)-Zn(1)-N(2)	111.55(14)	O(1)-Zn(1)-N(2)	105.32(15)
O(5)-Zn(2)-O(2W)#2	109.44(13)	O(5)-Zn(2)-O(2)#3	134.65(14)
O(2W)#2-Zn(2)-O(2)#3	115.73(13)	O(5)-Zn(2)-N(1)#4	88.06(14)
O(2W)#2-Zn(2)-N(1)#4	104.26(13)	O(2)#3-Zn(2)-N(1)#4	84.87(14)
O(5)-Zn(2)-O(2W)#3	91.05(12)	O(2W)#2-Zn(2)-O(2W)#3	84.21(12)
O(2)#3-Zn(2)-O(2W)#3	89.61(12)	N(1)#4-Zn(2)-O(2W)#3	171.28(12)

Symmetry transformations used to generate equivalent atoms: #1 -x+2,-y+2,-z; #2 -x+2,-y+1,-z; #3 x+1,y-1,z; #4 x+2,y,z-1; #5 -x+3,-y,-z; #6 x-1,y+1,z; #7 x-2,y,z+1

<b>3</b>			
Zn(1)-O(1)	1.954(3)	Zn(1)-O(13)	1.980(3)
Zn(1)-O(7)	1.992(3)	Zn(1)-O(10)#1	1.994(3)
O(1)-Zn(1)-O(13)	108.01(12)	O(1)-Zn(1)-O(7)	116.64(12)
O(13)-Zn(1)-O(7)	113.20(13)	O(1)-Zn(1)-O(10)#1	113.64(12)

O(13)-Zn(1)-O(10)#1	105.30(12)	O(7)-Zn(1)-O(10)#1	99.39(11)
C(10)-O(7)-Zn(1)	108.1(2)		

Symmetry transformations used to generate equivalent atoms: #1 x,y-1,z; #2 x,y+1,z

#### 4

Zn(1)-N(1)	2.029(4)	Zn(1)-O(6)#1	2.032(4)
Zn(1)-O(5)	2.052(4)	Zn(1)-O(7)#2	2.062(4)
Zn(1)-O(8)#3	2.070(4)	Zn(1)…Zn(1)#1	2.9877(11)
Zn(2)-O(4)#4	1.951(4)	Zn(2)-O(3)	1.964(4)
Zn(2)-O(1)#5	2.022(7)	Zn(2)-N(2)	2.042(4)
Zn(2)-O(2)#5	2.468(8)		
N(1)-Zn(1)-O(6)#1	101.02(18)	N(1)-Zn(1)-O(5)	100.56(17)
O(6)#1-Zn(1)-O(5)	158.37(16)	N(1)-Zn(1)-O(7)#2	101.10(18)
O(6)#1-Zn(1)-O(7)#2	87.57(18)	O(5)-Zn(1)-O(7)#2	89.59(18)
N(1)-Zn(1)-O(8)#3	99.48(18)	O(6)#1-Zn(1)-O(8)#3	88.89(18)
O(5)-Zn(1)-O(8)#3	86.27(19)	O(7)#2-Zn(1)-O(8)#3	159.41(17)
O(2)#5-Zn(2)-C(52)#5	28.7(3)	O(4)#4-Zn(2)-O(3)	121.1(2)
O(4)#4-Zn(2)-O(1)#5	107.6(3)	O(3)-Zn(2)-O(1)#5	99.3(3)
O(4)#4-Zn(2)-N(2)	98.18(17)	O(3)-Zn(2)-N(2)	97.41(19)
O(1)#5-Zn(2)-N(2)	135.5(3)	O(4)#4-Zn(2)-O(2)#5	98.8(3)
O(3)-Zn(2)-O(2)#5	139.2(3)	O(1)#5-Zn(2)-O(2)#5	57.2(3)
N(2)-Zn(2)-O(2)#5	83.8(2)	O(4)#4-Zn(2)-C(52)#5	107.1(2)
O(3)-Zn(2)-C(52)#5	120.1(3)	O(1)#5-Zn(2)-C(52)#5	28.7(3)
N(2)-Zn(2)-C(52)#5	109.3(3)		

Symmetry transformations used to generate equivalent atoms: #1 -x+5/2,-y+1/2,-z; #2 x,-y,z-1/2; #3 -x+5/2,y+1/2,-z+1/2; #4 -x+3/2,-y+5/2,-z; #5 -x+3/2,y+1/2,-z+1/2; #6 -x+3/2,y-1/2,-z+1/2; #7 x,-y,z+1/2; #8 -x+5/2,y-1/2,-z+1/2; #9 -x,-y,-z

#### 5

Zn(1)-O(5)#1	1.965(5)	Zn(1)-O(7)	2.000(5)
Zn(1)-O(10)#2	2.003(6)	Zn(1)-N(2)#3	2.041(6)
Zn(1)-O(9)#2	2.359(6)	Zn(2)-O(1)	2.272(5)
Zn(2)-O(6)	1.970(5)	Zn(2)-O(4)#1	1.995(5)
Zn(2)-O(2)	2.044(5)	Zn(2)-N(1)	2.064(6)
O(4)-Zn(2)#4	1.995(5)	O(10)-Zn(1)#5	2.002(6)
O(9)-Zn(1)#5	2.359(6)	N(2)-Zn(1)#6	2.041(6)
O(5)#1-Zn(1)-O(7)	101.8(2)	O(5)#1-Zn(1)-O(10)#2	131.7(2)
O(7)-Zn(1)-O(10)#2	101.7(2)	O(5)#1-Zn(1)-N(2)#3	104.6(2)
O(7)-Zn(1)-N(2)#3	100.7(2)	O(10)#2-Zn(1)-N(2)#3	111.6(3)
O(5)#1-Zn(1)-O(9)#2	89.4(2)	O(7)-Zn(1)-O(9)#2	159.8(2)
O(10)#2-Zn(1)-O(9)#2	58.9(2)	N(2)#3-Zn(1)-O(9)#2	92.5(2)
O(6)-Zn(2)-C(25)	122.3(2)	O(6)-Zn(2)-O(4)#1	102.1(2)

O(6)-Zn(2)-O(2)	147.2(2)	O(4)#1-Zn(2)-O(2)	97.6(2)
O(6)-Zn(2)-N(1)	103.4(2)	O(4)#1-Zn(2)-N(1)	99.1(2)
O(2)-Zn(2)-N(1)	98.9(2)	O(6)-Zn(2)-O(1)	94.0(2)
O(4)#1-Zn(2)-O(1)	157.4(2)	O(2)-Zn(2)-O(1)	61.1(2)
N(1)-Zn(2)-O(1)	92.2(2)		

Symmetry transformations used to generate equivalent atoms: #1 x+1/2,y+1/2,z; #2 x+1/2,y-1/2,z; #3 x+1,-y+2,z+3/2; #4 x-1/2,y-1/2,z; #5 x-1/2,y+1/2,z; #6 x-1,-y+2,z-3/2

**Table S2.** The hydrogen bonding parameters ( $\text{\AA}$ ) and angles (deg) in **3**.

D--H $\cdots$ A	D-H	D $\cdots$ A	D--H $\cdots$ A
N(1)-H(1A) $\cdots$ O(2) <sup>#3</sup>	0.86	2.693(5)	140
N(2)-H(2A) $\cdots$ O(5) <sup>#4</sup>	0.86	2.564(5)	177
O(4)-H(4) $\cdots$ O(3) <sup>#5</sup>	0.85(8)	2.591(5)	152(10)
O(12)-H(12) $\cdots$ O(9) <sup>#6</sup>	0.82	2.789(4)	166.00

Symmetry transformations used to generate equivalent atoms: #3 x-1,y-1,z; #4 x+2,y+1,z; #5 -x,-y,-z; #6 x+1,y,z