

## Syntheses, characterizations and properties of five new metal-organic complexes based on flexible ligand 4,4'-(phenylazanediyl) dibenzoic acid

Jianliang Zhou<sup>†,\*</sup>, Yuanyuan Wang<sup>†</sup>, Ling Qin,<sup>‡</sup> Mingdao Zhang,<sup>‡</sup> Qinxiang Yang,<sup>‡</sup>  
Hegen Zheng<sup>†,\*</sup>

<sup>†</sup>*School of Chemistry and Chemical Engineering, Central South University, Changsha, 410083, China.*

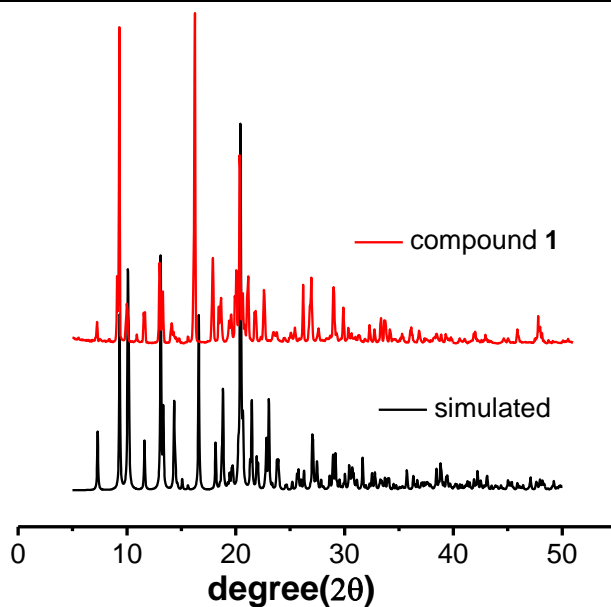
<sup>‡</sup>*State Key Laboratory of Coordination Chemistry, School of Chemistry and Chemical Engineering, Nanjing National Laboratory of Microstructures, Nanjing University, Nanjing 210093, P. R. China.*

**Table S1.** Selected Bond Lengths (Å) and Angles (deg) for Compounds **1-5**.

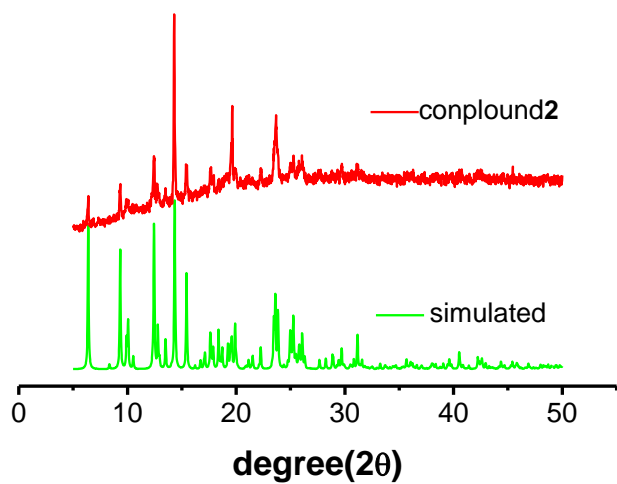
Compound 1			
Zn1-N2	2.001(2)	Zn1-O1	1.975(2)
Zn1-O2#1	1.983(2)	Zn1-O3#2	1.939(1)
N2-Zn1- O1	108.79(7)	N2-Zn1- O2#1	101.70(7)
N2-Zn1-O3#2	113.69(7)	O1-Zn1- O2#1	117.01(7)
O1-Zn1- O3#2	107.99(6)	O2#1-Zn1- O3#2	107.78(6)
Compound 2			
Co1-N3	2.1805(19)	Co1-O1	2.0606(15)
Co1-O2#1	2.0195(16)	Co1-N1	2.1761(19)
Co1-O6#2	2.2023(15)	Co1-O5#2	2.1928(15)
O5#2- Co1- O6#2	59.766(5)	O5#2- Co1- N1	91.490(5)

O5#2- Co1- O2#1	152.625(6)	O5#2- Co1- O1	91.084(7)
O5#4- Co1-N3	88.775(7)	O6#2-Co1- N1	86.59(6)
O6#2-Co1- O2#1	94.163(6)	O6#2-Co1- O1	150.621(6)
O6#2-Co1-N3	95.296(6)	N1- Co1- O2#1	94.610(6)
N1- Co1- O1	92.573 (6)	N1- Co1-N3	179.523(7)
O2#1- Co1-O1	115.212 (6)	O2#1- Co1-N3	85.332(6)
O1- Co1-N3	87.052(6)		
<b>Compound 3</b>			
Cd1-N2	2.3298 (1)	Cd1-O2	2.3368 (8)
Cd1-O1	2.4019 (1)	Cd1- N3#2	2.3411 (1)
Cd1-O3#3	2.3127(9)	Cd1- O3#4	2.5463(8)
Cd1- O4#4	2.3496(9)	N2-Cd1- O2	90.575(2)
N2-Cd1-O1	83.788(3)	N2-Cd1- N3#2	175.325(4)
N2-Cd1- O3#3	91.673 (3)	N2-Cd1- O3#4	83.859(3)
N2-Cd1- O4#4	98.480(3)	O2-Cd1- O1	54.875(3)
O2-Cd1- N3#2	90.725(3)	O2-Cd1-O3#3	150.084(3)
O2-Cd1- O3#4	135.087 (3)	O2-Cd1- O4#4	84.667(3)
O1-Cd1- N3#2	93.297(3)	O1-Cd1- O3#3	95.754(3)
O1-Cd1- O3#4	164.186(3)	O1-Cd1- O4#4	139.540(3)
N3#2-Cd1- O3#3	84.970(3)	N3#2-Cd1- O3#4	98.355(3)
N3#2-Cd1- O4#4	86.112(3)	O3#3-Cd1- O3#4	74.784(3)
O3#3-Cd1- O4#4	124.385(3)	O3#4-Cd1- O4#4	52.564(3)
<b>Compound 4</b>			
Zn1-N2	2.0940(5)	Zn1-O4#1	1.9563(5)
Zn1-N5#2	2.0110(5)	Zn1-O1	1.9443(4)
N2-Zn1- O4#1	93.271(2)	N2-Zn1- O1	103.881(17)

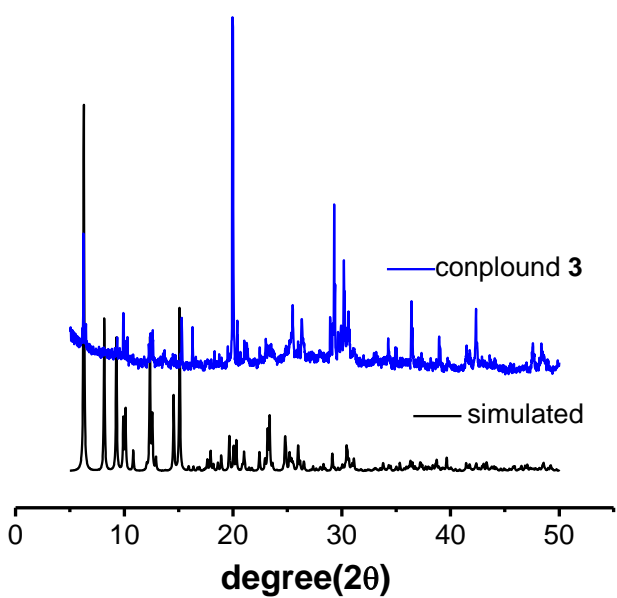
N2-Zn1- N5#2	102.209(18)	O4#1-Zn1- O1	108.020(2)
O4#1-Zn1- N5#2	119.172(2)	O1-Zn1- N5#2	123.87(17)
<b>Compound 5</b>			
Co1-N1	2.0626(2)	Co1-O2#1	2.0945(2)
Co1-O3#3	2.0214(2)	Co1-Co1#1	2.7451(5)
Co1-O1	2.044(2)	Co1-O4#2	2.0170(2)
N1-Co1- O2#1	93.696(8)	N1-Co1- O3#3	95.256(10)
N1-Co1- Co1#1	165.99(7)	N1-Co1- O1	100.81(9)
N1-Co1- O4#2	99.08(10)	O2#1-Co1- O3#3	89.80(9)
O2#1-Co1- Co1#1	73.83(6)	O2#1-Co1- O1	165.49 (8)
O2#1-Co1- O4#2	86.81(9)	O3#3-Co1- Co1#1	78.68(6)
O3#3-Co1- O1	88.42(9)	O3#3-Co1- O4#2	165.46(9)
Co1#1-Co1- O1	91.70(6)	Co1#1-Co1- O4#2	86.80(6)
O1-Co1- O4#2	91.32(10)		



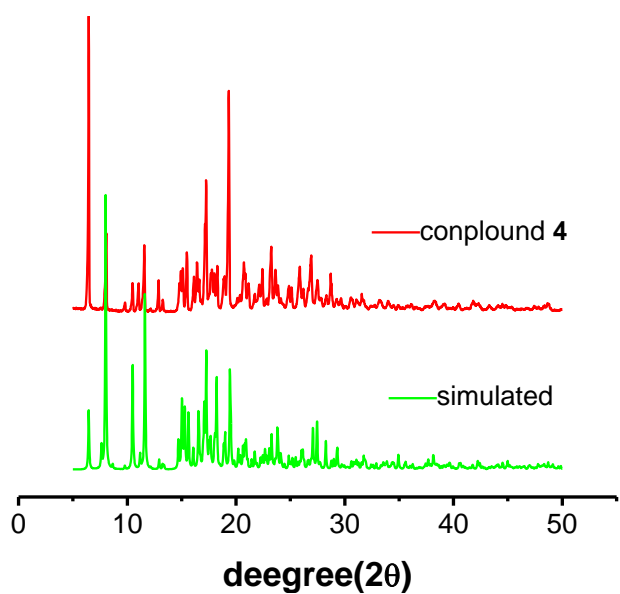
**Figure S1.** Powder X-ray diffraction patterns of complex **1**



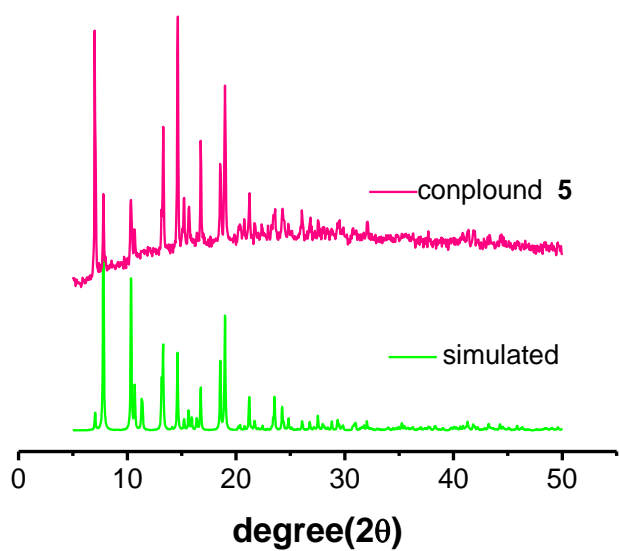
**Figure S2.** Powder X-ray diffraction patterns of complex **2**



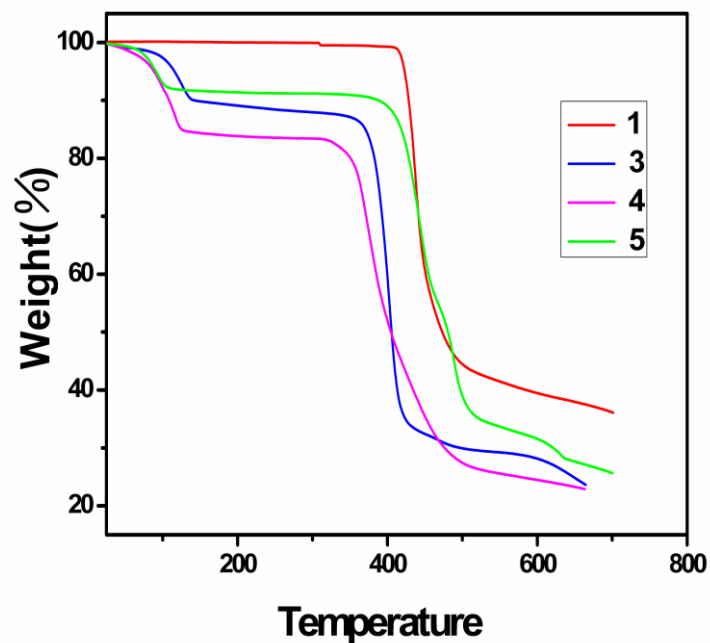
**Figure S3.** Powder X-ray diffraction patterns of complex **3**



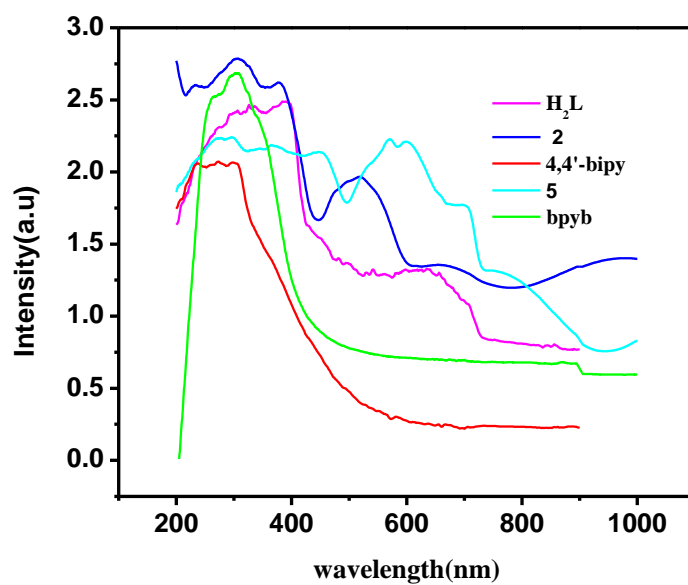
**Figure S4.** Powder X-ray diffraction patterns of complex 4



**Figure S5.** Powder X-ray diffraction patterns of complex 5



**Figure S6.** The TGA diagrams of complexes 1- 5



**Figure S7.** Solid-state UV-vis absorption spectra of **2**, **5** and corresponding ligands at room temperature.