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Synthesis of several novel Coordination Complexes: Ion exchange, Magnetic and Photocatalysis Studies

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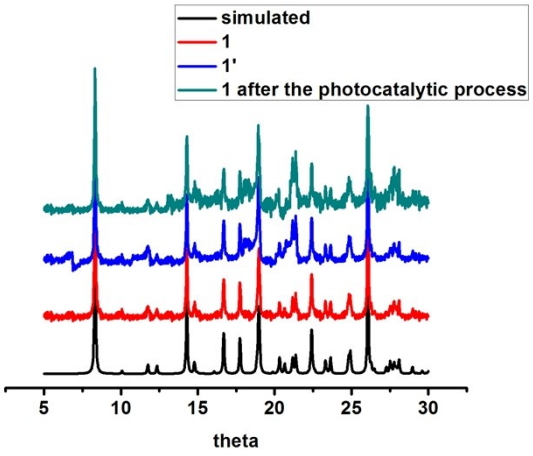
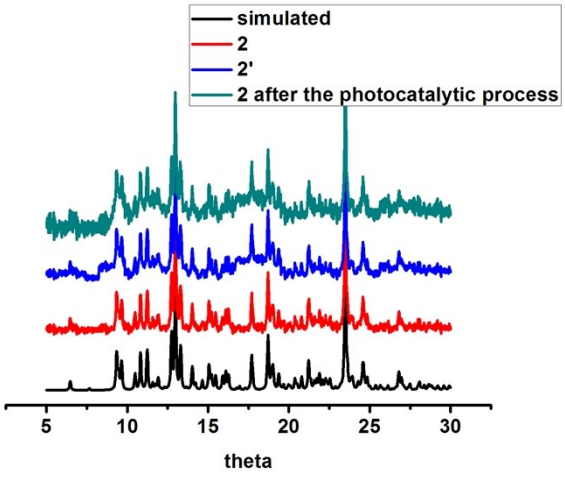

simulated
1
1'
1 after the photocatalytic process
5
10
15
20
25
30
theta


simulated
2
2'
2 after the photocatalytic process
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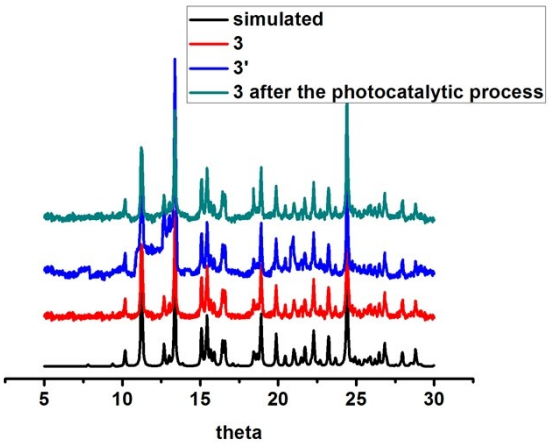
theta


simulated
3
3'
3 after the photocatalytic process
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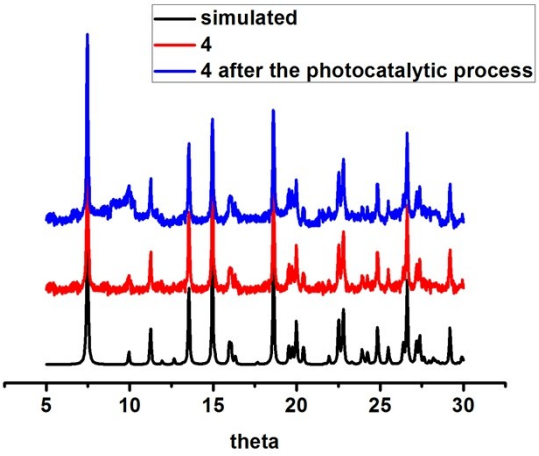
theta


simulated
4
4 after the photocatalytic process
5
10
15
20
25
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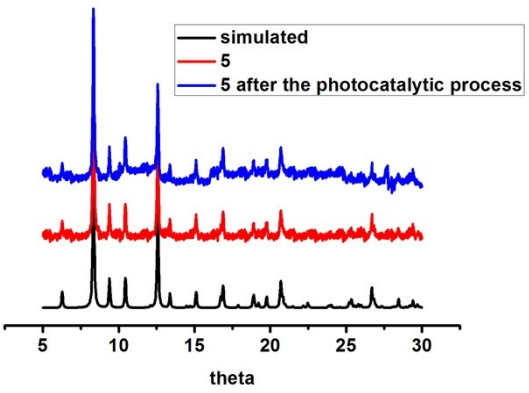
theta


simulated
5
5 after the photocatalytic process
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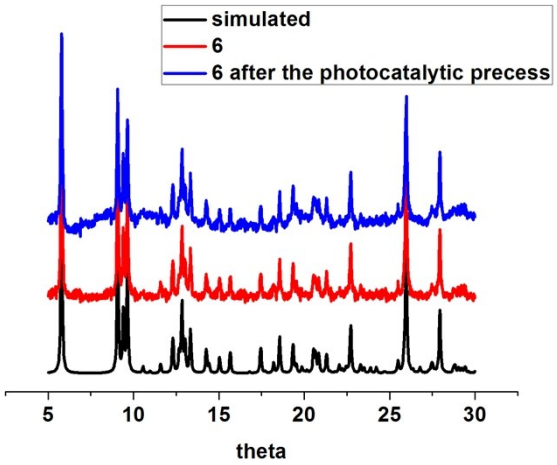
simulated
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6 after the photocatalytic precess
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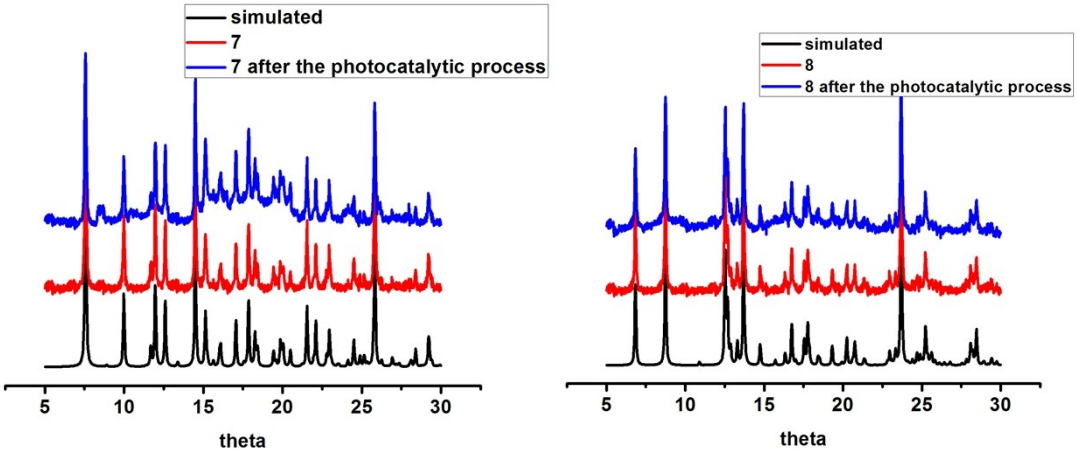


Figure S1. The powder **XRD** patterns of **1**-**8**.

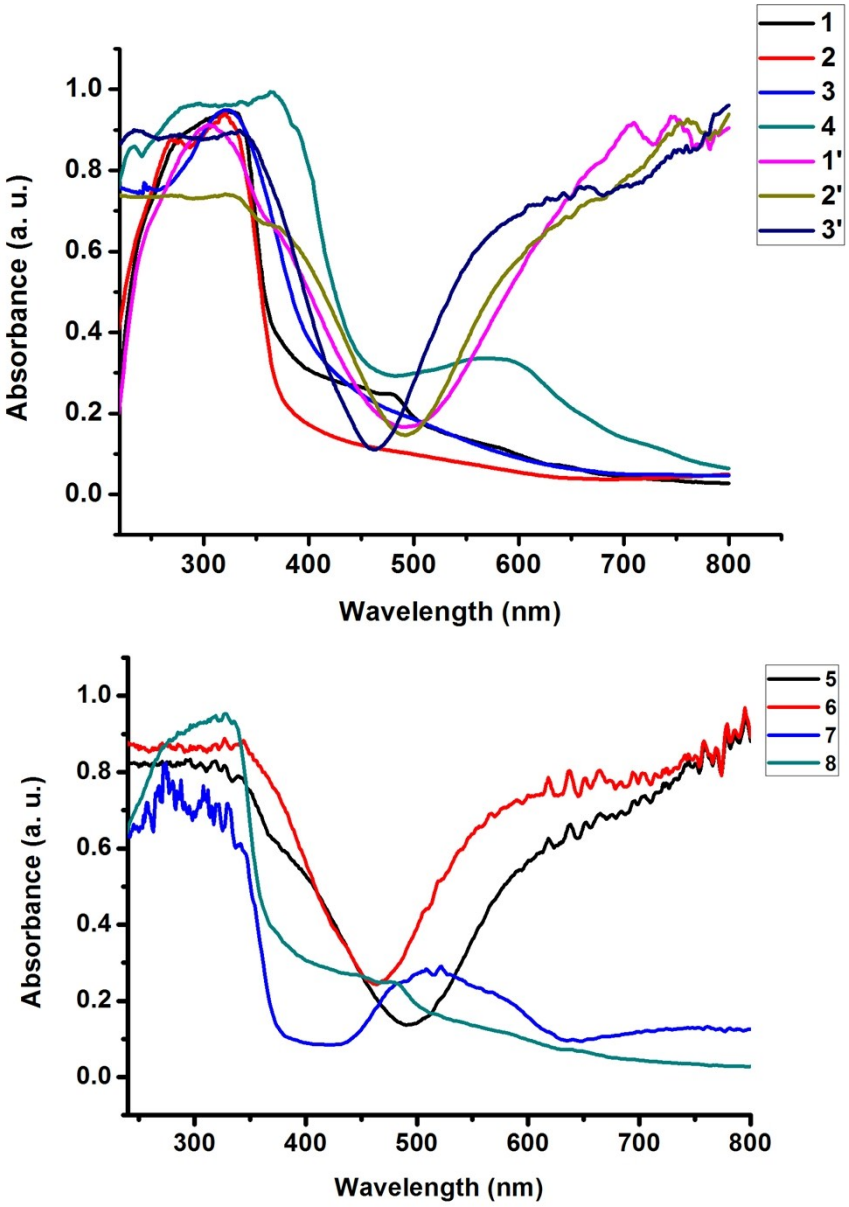
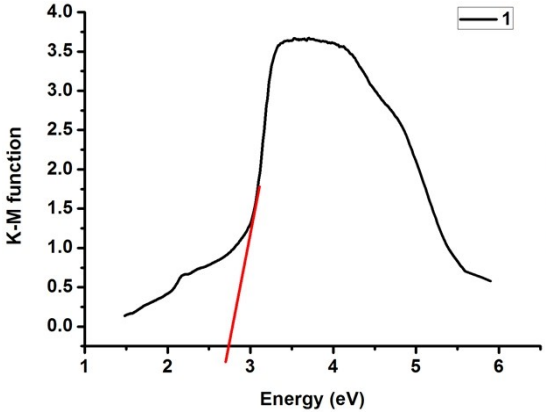


Figure S2. The UV-vis absorption spectrum of these complexes.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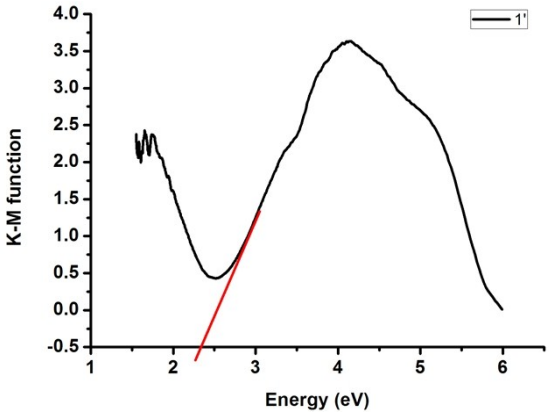
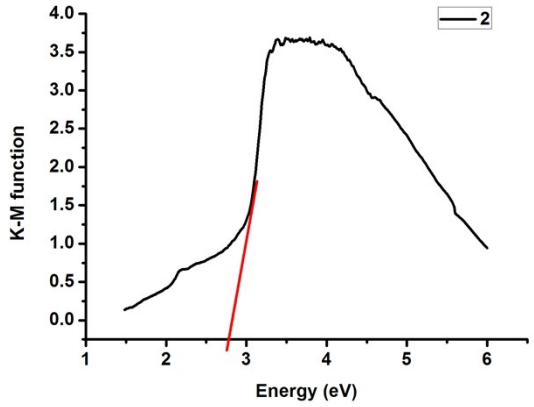
K-M function
Energy (eV)


1'
K-M function
Energy (eV)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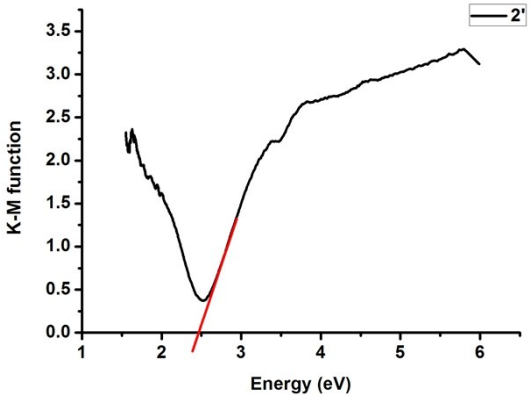
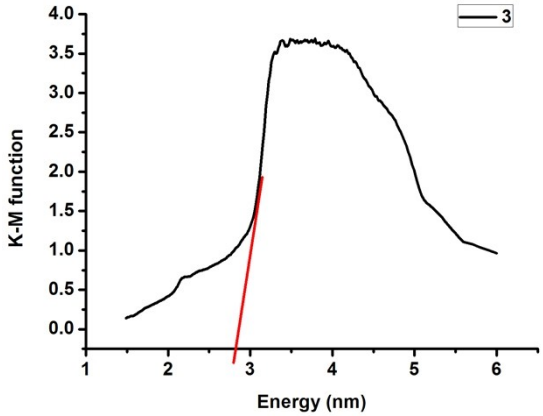
K-M function
Energy (eV)


2'
K-M function
Energy (eV)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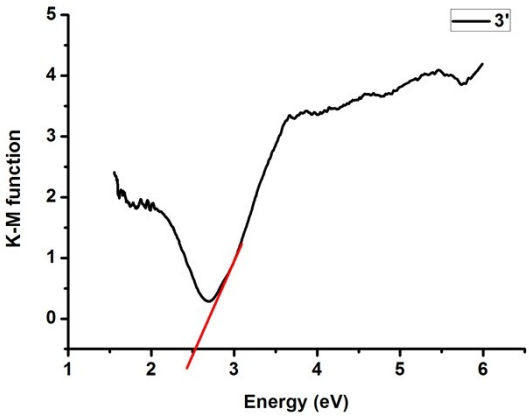
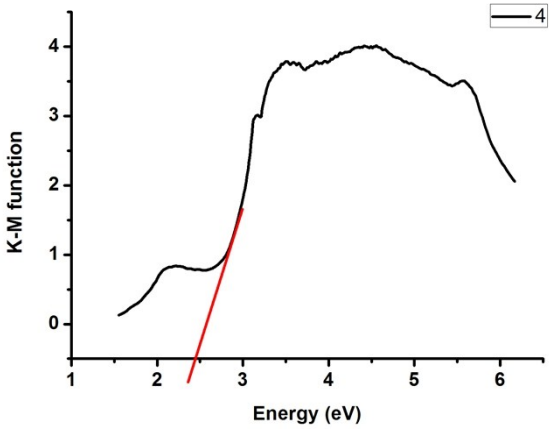
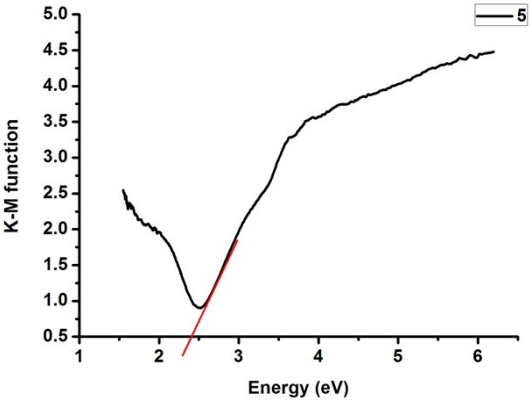
K-M function
Energy (nm)


3'
K-M function
Energy (eV)


4
K-M function
Energy (eV)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K-M function
Energy (eV)

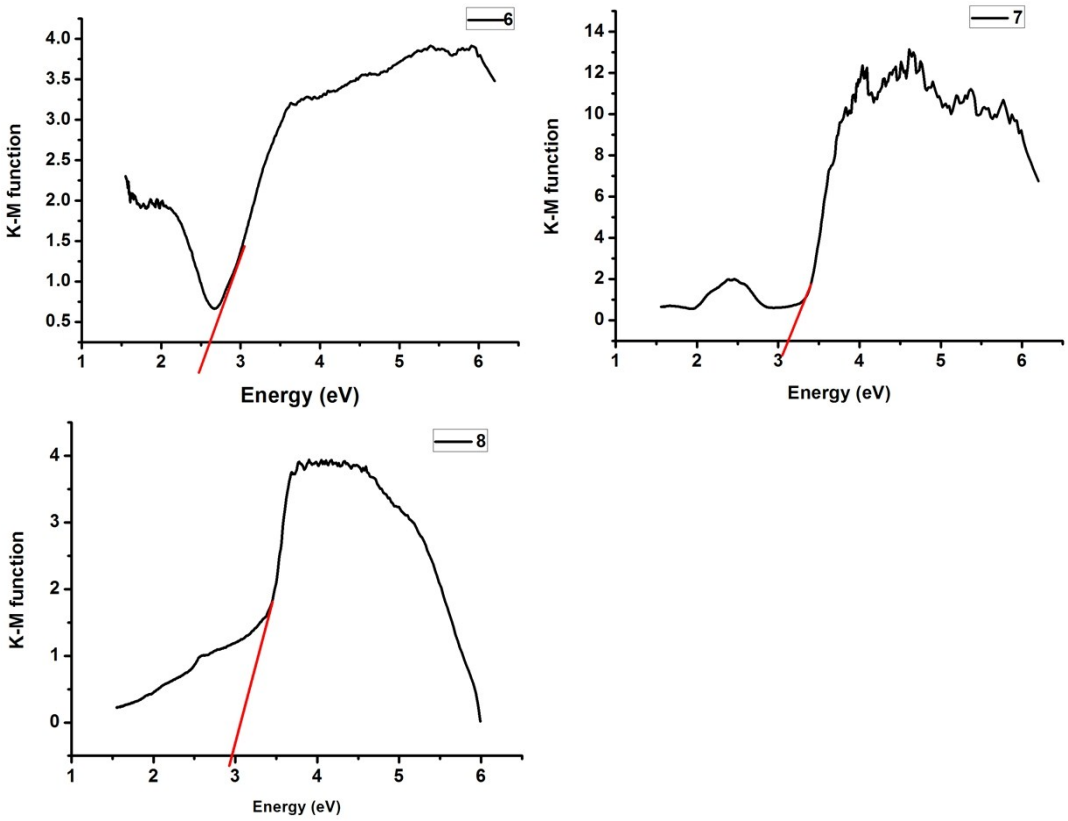

Figure S3. Kubelka-Munk-transformed diffuse reflectance of these complexes.

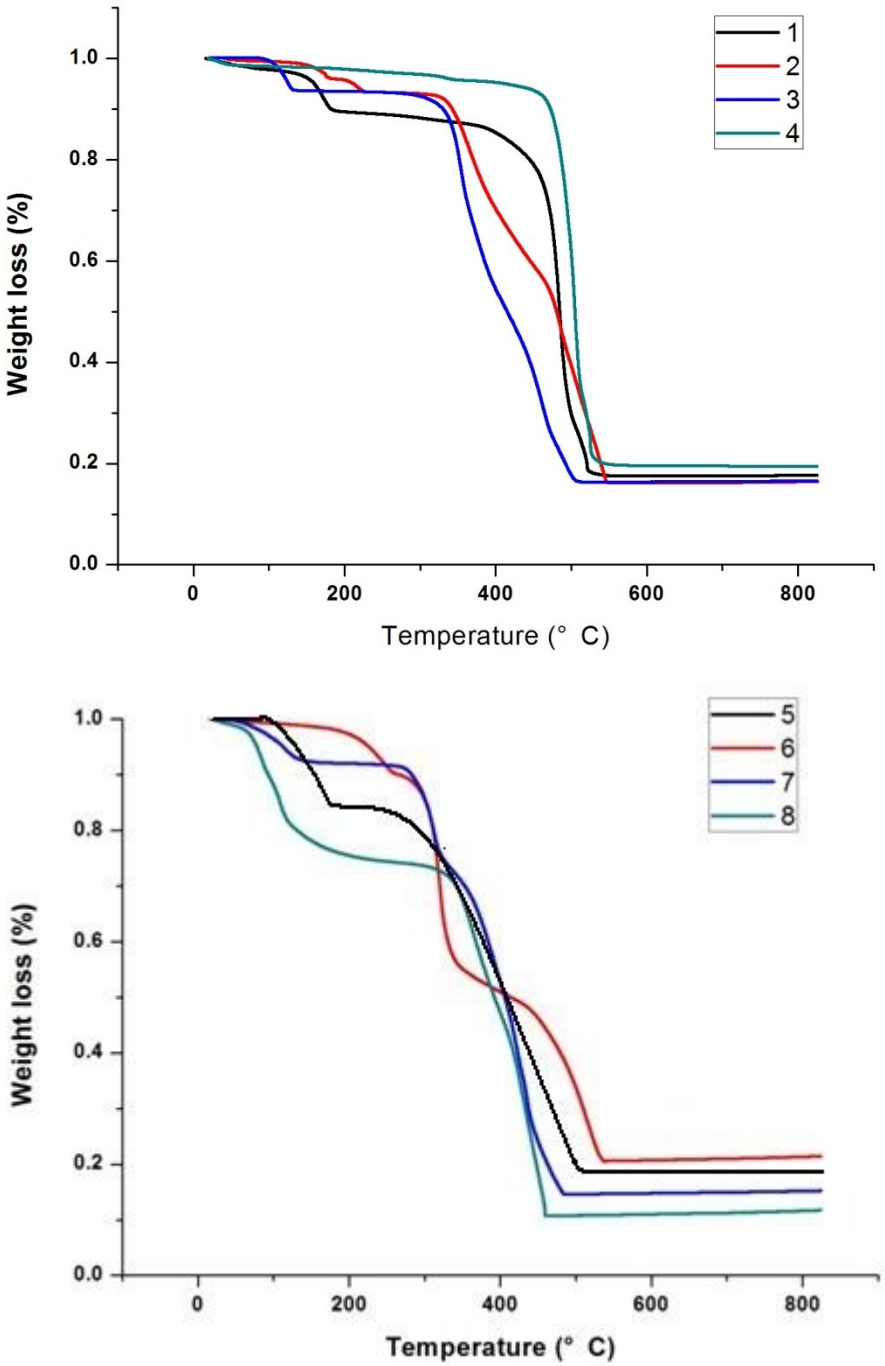

Figure S4. The TG curves of complexes **1**-**8**.

Table S1. Selected Bond Lengths (Å) and Bond Angles (deg) for **1-8**[a].

Complex **1**			
Zn(1)-O(1)#1	1.9533(19)	Zn(1)-O(3)#2	1.957(2)
Zn(1)-O(2)	1.9822(19)	Zn(1)-O(6)	1.991(2)
O(1)#1-Zn(1)-O(3)#2	132.20(9)	O(1)#1-Zn(1)-O(2)	106.90(9)
O(3)#2-Zn(1)-O(2)	98.25(9)	O(1)#1-Zn(1)-O(6)	106.11(10)
O(3)#2-Zn(1)-O(6)	104.37(10)	O(2)-Zn(1)-O(6)	106.88(9)
Complex **2**			
Zn(1)-O(6)	1.973(3)	Zn(1)-O(11)	2.068(3)
Zn(1)-N(4)	2.134(3)	Zn(1)-O(1)	2.141(3)
Zn(1)-N(3)	2.157(3)	Zn(1)-O(2)	2.390(3)
Zn(2)-O(4)	1.954(3)	Zn(2)-O(8)#2	1.980(3)
Zn(2)-O(12)	2.074(3)	Zn(2)-N(1)	2.104(4)
Zn(2)-N(2)	2.190(4)	O(6)-Zn(1)-O(11)	100.95(12)
O(6)-Zn(1)-N(4)	120.22(12)	O(11)-Zn(1)-N(4)	93.83(12)
O(6)-Zn(1)-O(1)	96.91(11)	O(11)-Zn(1)-O(1)	92.27(12)
N(4)-Zn(1)-O(1)	140.28(12)	O(6)-Zn(1)-N(3)	90.15(12)
N(4)-Zn(1)-N(3)	77.11(13)	O(11)-Zn(1)-O(2)	86.39(11)
O(1)-Zn(1)-O(2)	57.27(11)	O(4)-Zn(2)-O(8)#2	128.15(13)
O(12)-Zn(2)-N(1)	93.73(16)	O(4)-Zn(2)-N(2)	89.23(14)
O(8)#2-Zn(2)-N(2)	90.44(14)	N(1)-Zn(2)-N(2)	77.12(17)
Complex **3**			
Zn(1)-O(5)#1	1.935(2)	Zn(1)-O(3)	1.974(2)
Zn(1)-O(1)	2.098(2)	Zn(1)-N(2)	2.112(3)
Zn(1)-N(1)	2.199(3)	O(5)#1-Zn(1)-O(3)	125.80(10)
O(5)#1-Zn(1)-O(1)	101.74(9)	O(3)-Zn(1)-O(1)	89.55(9)
O(5)#1-Zn(1)-N(2)	121.96(10)	O(3)-Zn(1)-N(2)	110.38(10)
O(1)-Zn(1)-N(2)	91.27(10)	O(5)#1-Zn(1)-N(1)	89.85(10)
Complex **4**			
Zn(1)-O(4)#1	1.976(3)	Zn(1)-O(2)	2.001(3)
Zn(1)-O(1)#2	2.008(3)	Zn(1)-N(2)	2.082(4)
O(4)#1-Zn(1)-O(2)	100.28(14)	O(4)#1-Zn(1)-O(1)#2	104.53(14)
O(2)-Zn(1)-O(1)#2	95.67(13)	O(4)#1-Zn(1)-N(2)	130.50(15)
O(2)-Zn(1)-N(2)	112.14(14)	O(1)#2-Zn(1)-N(2)	108.15(14)
Complex **5**			
Cu(1)-O(3)	1.943(2)	Cu(1)-O(5)	1.954(3)
Cu(1)-O(1)	1.978(2)	Cu(1)-O(4)	1.979(3)
Cu(1)-O(2)	2.163(3)	O(3)-Cu(1)-O(1)	88.79(11)
O(5)-Cu(1)-O(1)	90.56(11)	O(3)-Cu(1)-O(4)	88.08(11)
O(5)-Cu(1)-O(4)	90.23(11)	O(1)-Cu(1)-O(4)	168.01(8)
O(3)-Cu(1)-O(2)	96.20(11)	O(5)-Cu(1)-O(2)	95.21(10)
O(1)-Cu(1)-O(2)	95.62(11)	O(4)-Cu(1)-O(2)	96.22(11)

Complex **6**			
Cu(1)-O(1)	1.9503(19)	Cu(1)-O(1)#1	1.9503(19)
Cu(1)-N(3)#1	1.992(2)	Cu(1)-N(3)	1.992(2)
Cu(2)-O(3)#2	1.9463(19)	Cu(2)-O(2)	1.9627(19)
Cu(2)-N(2)	2.010(2)	Cu(2)-N(1)	2.023(2)
Cu(2)-O(5)	2.386(3)	N(3)#1-Cu(1)-N(3)	82.33(13)
O(1)-Cu(1)-O(1)#1	95.32(11)	O(1)-Cu(1)-N(3)#1	171.54(9)
O(1)#1-Cu(1)-N(3)#1	91.44(9)	O(1)-Cu(1)-N(3)	91.44(9)
O(1)#1-Cu(1)-N(3)	171.54(9)	O(3)#2-Cu(2)-O(2)	98.46(8)
O(3)#2-Cu(2)-N(2)	171.46(9)	O(2)-Cu(2)-N(2)	88.76(9)
O(3)#2-Cu(2)-N(1)	90.59(9)	O(2)-Cu(2)-N(1)	167.15(10)
N(2)-Cu(2)-N(1)	81.58(10)	O(3)#2-Cu(2)-O(5)	92.95(12)
Complex **7**			
Co(1)-O(2)	2.033(3)	Co(1)-N(3)#1	2.107(3)
Co(1)-N(2)	2.160(4)	Co(1)-O(5)#2	2.166(4)
Co(1)-O(1)	2.197(3)	Co(1)-O(4)#2	2.288(3)
O(2)-Co(1)-N(3)#1	126.53(13)	O(2)-Co(1)-N(2)	93.26(13)
N(3)#1-Co(1)-N(2)	96.89(13)	O(2)-Co(1)-O(5)#2	141.48(11)
N(3)#1-Co(1)-O(5)#2	89.59(11)	N(2)-Co(1)-O(5)#2	95.17(12)
O(2)-Co(1)-O(1)	81.99(13)	N(3)#1-Co(1)-O(1)	85.12(13)
N(2)-Co(1)-O(1)	175.11(13)	N(3)#1-Co(1)-O(4)#2	147.86(12)
Complex **8**			
Co(1)-O(3)#1	2.0516(10)	Co(1)-O(1)	2.0653(9)
Co(1)-O(6)	2.1014(11)	Co(1)-N(2)	2.1471(12)
Co(1)-N(1)	2.1526(11)	Co(1)-O(7)	2.1536(10)
O(3)#1-Co(1)-O(1)	92.30(4)	O(3)#1-Co(1)-O(6)	177.18(3)
O(1)-Co(1)-O(6)	90.49(4)	O(3)#1-Co(1)-N(2)	85.09(4)
O(1)-Co(1)-N(2)	93.03(4)	O(6)-Co(1)-N(2)	95.17(4)
O(3)#1-Co(1)-N(1)	87.69(4)	O(1)-Co(1)-N(1)	170.43(3)
O(6)-Co(1)-N(1)	89.63(4)	N(2)-Co(1)-N(1)	77.43(4)

[a] Symmetry transformations used to generate equivalent atoms: complex **1**: #1 -x+2,-y+3,-z+2; #2 -x+2,-y+2,-z+2; complex **2** : #1 -x,y+1/2,-z+3/2; #2 -x,y-1/2,-z+3/2. complex **3**: #1 -x+1,y-1/2,-z+1/2. Complex **4**: #1 x,-y+1,z-1/2; #2 -x+1/2,y-1/2,-z+1/2. Complex **6**: #1 -x,y,-z+1/2; #2 -x+1/2,y-1/2,-z+1/2 ; Complex **7**: #1 x+1,y,z, #2 x,y-1,z. Complex **8**: #1 x,-y+1/2,z-1/2, #2 x,-y+1/2,z+1/2.