Supplementary Material (ESI) for Dalton Transactions
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Assembly and photocatalysis of two novel 3D Anderson-type polyoxometalate-based metal-organic frameworks constructed from isomeric bis(pyridylformyl)piperazine ligands

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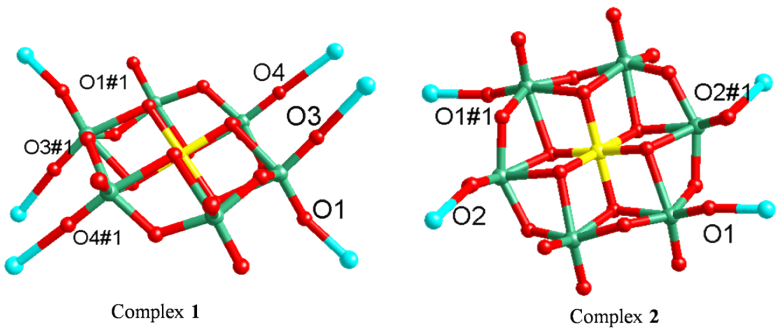
Table. S1. Selected bond distances (Å) and angles (°) for complexes **1** and **2.**

Complex **1**			
Cu(1)–N(1)	2.010(10)	Cu(1)–O(2)#1	2.021(7)
Cu(1)–O(1)	1.937(6)	Cu(1)–O(3)	2.278(7)
Cu(1)–O(2)	1.973(6)	Cu(1)–O(4)	2.441(6)
O(1)–Cu(1)–O(2)	171.7(3)	O(1)–Cu(1)–O(2)	89.2(3)
O(1)–Cu(1)–N(1)	91.8(3)	O(2)–Cu(1)–O(2)	83.1(3)
O(2)–Cu(1)–N(1)	96.0(3)	N(1)–Cu(1)–O(2)	178.9(3)
O(1)–Cu(1)–O(3)	92.9(3)	O(2)–Cu(1)–O(3)	89.8(3)
N(1)–Cu(1)–O(3)	92.6(3)	O(2)#2–Cu(1)–O(3)	86.8(3)
Complex **2**			
Cu(1)–N(1)	1.989(3)	Cu(1)–O(3)	2.384(3)
Cu(1)–O(1)	1.976(3)	Cu(1)–O(1W)	1.981(3)
Cu(1)–O(3)	2.384(3)	Cu(1)–O(2W)	1.950(3)
O(1W)–Cu(1)–N(1)	91.71(12)	N(1)–Cu(1)–O(3)	90.21(12)
O(2W)–Cu(1)–O(1)	85.84(13)	O(1)–Cu(1)–N(1)	91.56(12)
O(1W)–Cu(1)–O(3)	85.83(11)	O(2W)–Cu(1)–N(1)	161.76(14)
O(1)–Cu(1)–O(3)	87.43(11)	O(1)–Cu(1)–O(1W)	172.52(12)
O(2W)–Cu(1)–O(3)	107.67(12)	O(2W)–Cu(1)–O(1W)	93.11(13)

Symmetry codes for **1**: #1 –x,–y+3,–z+1;

Figures



Complex **1** Complex **2**

Fig. S1. The coordination modes in the title complexes. Symmetry codes for **1**: #1 1–x,–y+3,–z, for **2:** #1 1–x, –y, –z

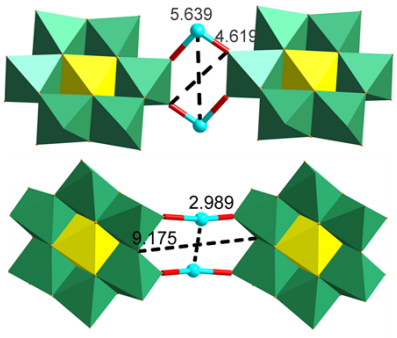


Fig. S2. Two kinds of the $Cu_2(POM)_2$ loops in complex **1**.

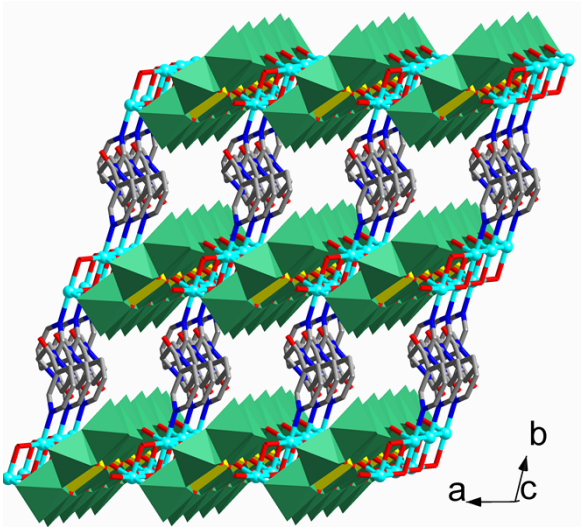


Fig. S3. The 3D framework of **1**.

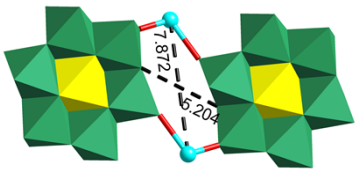


Fig. S4. The $Cu_2(POM)_2$ loop in **2.**

Fig. S5. The $[Cu_2L^2_2]$ metal-organic loop in **2.**

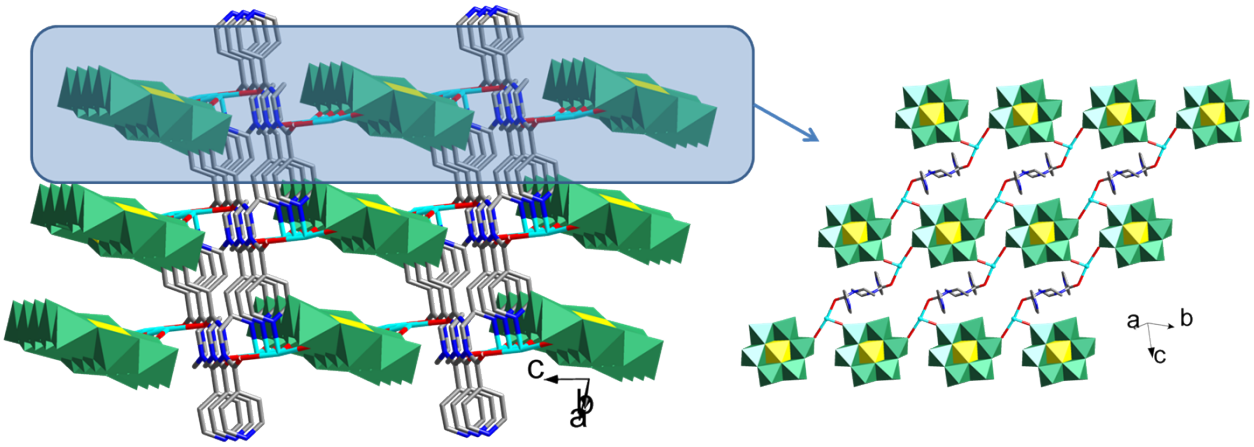


Fig. S6. The 3D framework of **2**.

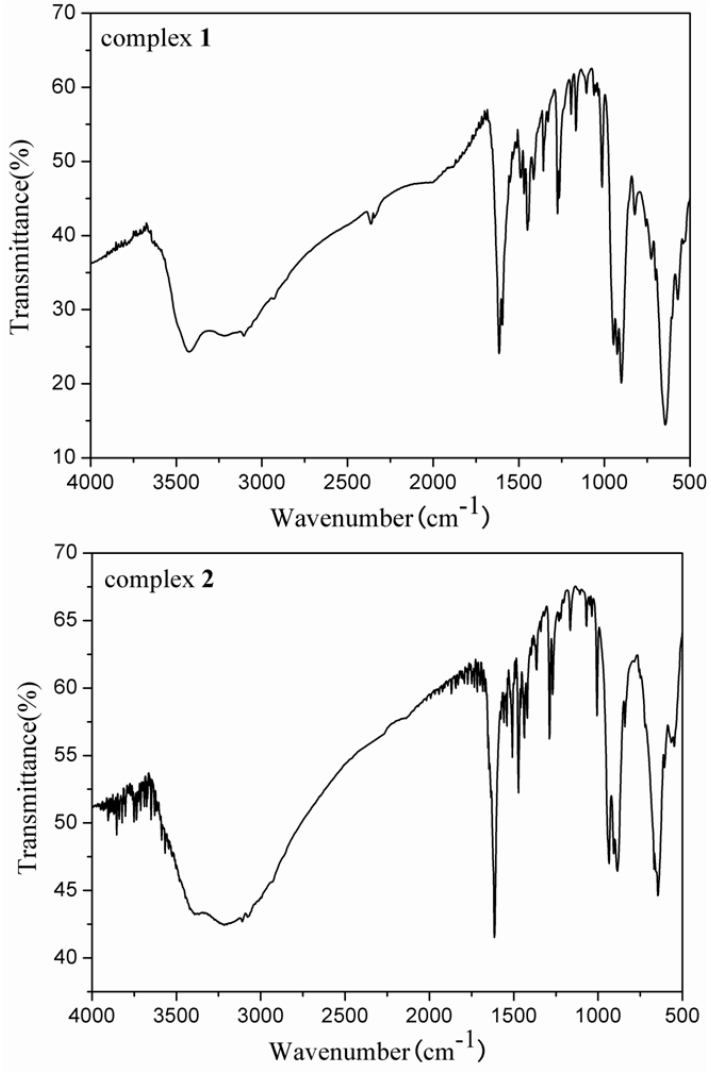


Fig. S7. The IR spectra of complexes **1** and **2.**

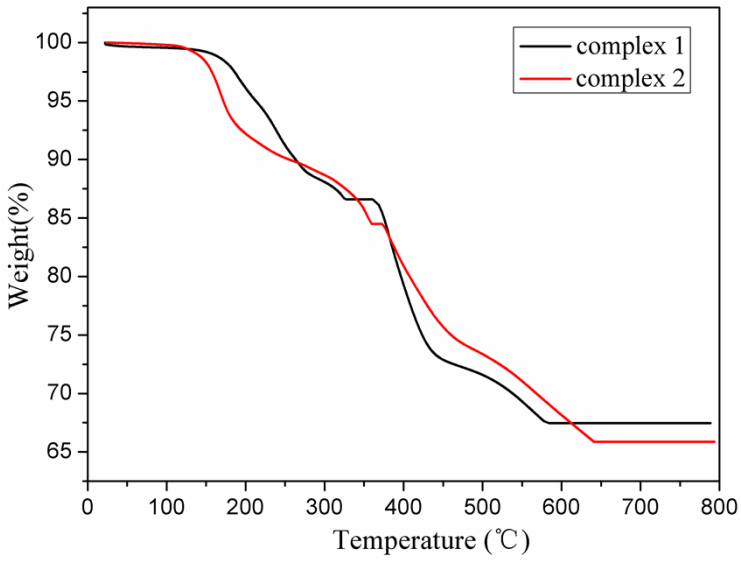


Fig. S8. The TGA curves of complexes **1** and **2.**

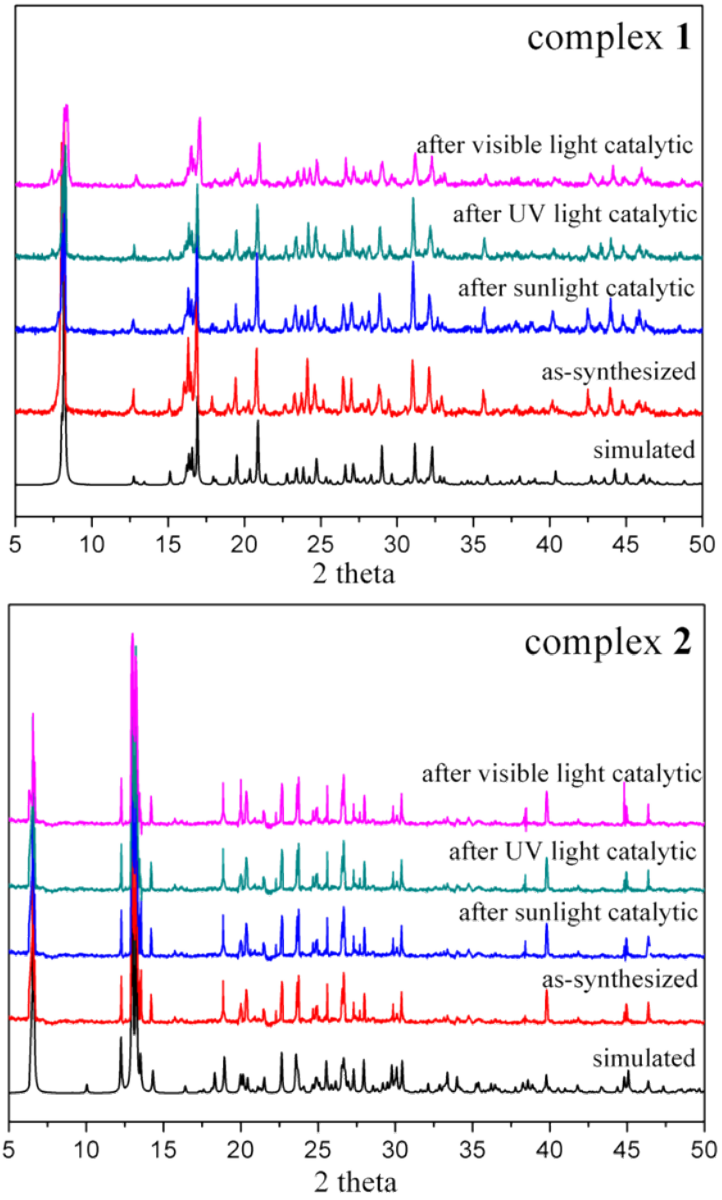


Fig. S9. Powder X-ray diffraction patterns of complexes **1** and **2**.