

Supplementary Material (ESI) for New Journal of Chemistry  
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## Four Keggin-based compounds constructed by a series of pyridine derivatives: synthesis, electrochemical and Fluorescence sensing properties

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Table S1. Selected bond distances (Å) and angles (°) for compounds 1–4.

Compound 1			
P(1)-O(13)	1.577(14)	W(1)-O(1)	1.666(11)
W(1)-O(3)	1.884(12)	C(2)-N(2)	1.385(17)
Ag(1)-N(3)	2.158(12)	N(3)-Ag(1)-N(3) <sup>2</sup>	180.0
Symmetry codes: <sup>1</sup> 1-X,1-Y,1-Z; <sup>2</sup> 1-X,2-Y,1-Z			
Compound 2			
Ag(1)-N(4)	2.441(7)	Ag(1)-N(1)	2.299(8)
Ag(1)-O(10)	2.328(5)	Ag(1)-O(37) <sup>1</sup>	2.391(6)
Ag(2)-N(5)	2.352(11)	Ag(2)-N(8)	2.366(7)
Ag(2)-O(25)	2.427(6)	O(37) <sup>1</sup> -Ag(1)-N(4)	90.5(2)
N(1)-Ag(1)-N(4)	75.6(3)	N(1)-Ag(1)-O(10)	121.6(3)
N(1)-Ag(1)-O(37) <sup>1</sup>	140.0(3)	N(5)-Ag(2)-O(25)	98.2(3)
N(5)-Ag(2)-N(8)	76.0(4)	N(8)-Ag(2)-O(25)	146.0(3)
O(10)-Ag(1)-N(4)	161.7(3)		
Symmetry codes: <sup>1</sup> 1-X,1-Y,1-Z			
Compound 3			
Ag(1)-N(2)	2.343(7)	Ag(1)-O(24)	2.558(6)
Ag(1)-O(1W)	2.387(8)	Si(1)-O(1)	1.631(5)
N(1)-C(1)	1.321(15)	Mo(1)-O(3)	2.336(6)
O(1W)-Ag(1)-O(24)	142.5(2)	N(2)-Ag(1)-O(1W)	96.3(2)
N(2)-Ag(1)-O(24)	114.8(2)		
Compound 4			
Ag(3)-N(5) <sup>1</sup>	2.174(11)	Ag(3)-N(8)	2.169(12)
Ag(4)-N(1)	2.147(12)	Ag(4)-N(4) <sup>2</sup>	2.155(12)

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Ag(2)-N(9) <sup>4</sup>	2.165(14)	Ag(2)-N(9)	2.165(14)
N(8)-Ag(3)-N(5) <sup>1</sup>	173.8(5)	N(1)-Ag(4)-N(4) <sup>2</sup>	177.3(4)
N(9)-Ag(2)-N(9) <sup>4</sup>	180.0		

Symmetry codes: <sup>1</sup>1/2+X,1/2+Y,+Z; <sup>2</sup>-1/2+X,-1/2+Y,+Z; <sup>3</sup>2-X,+Y,1/2-Z; <sup>4</sup>3/2-X,1/2-Y,1-Z; <sup>5</sup>1-X,-Y,1-Z

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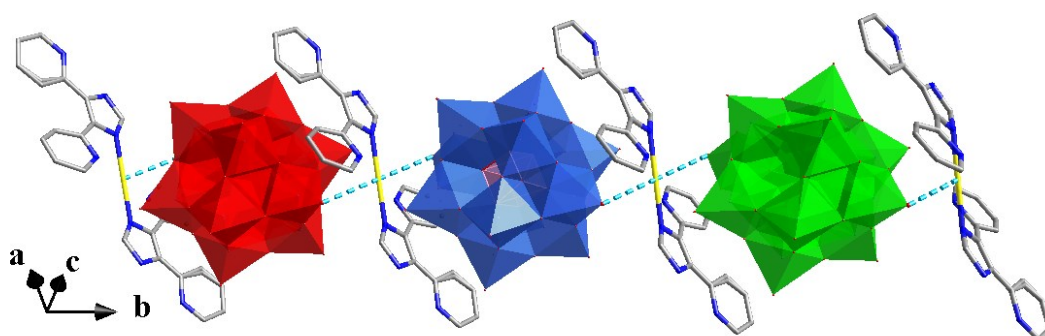


Fig. S1. The 1D infinite chain of compound 1.

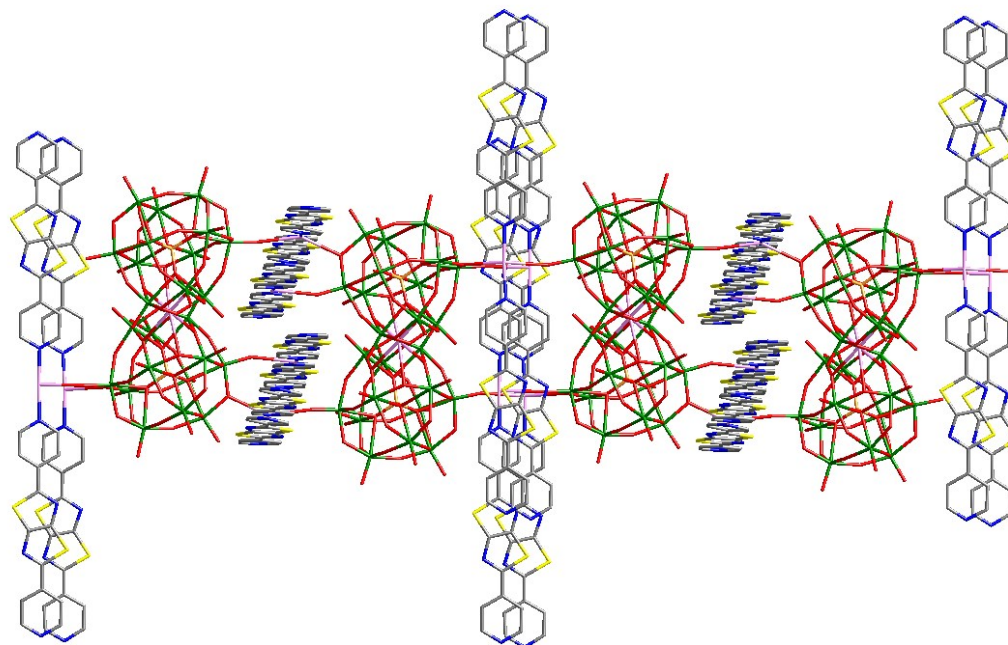


Fig. S2. The 1D infinite chain of compound 4 with the [Ag(Py2TTz)]<sup>+</sup> lines on both sides of anionic dimer

vertical with each other.

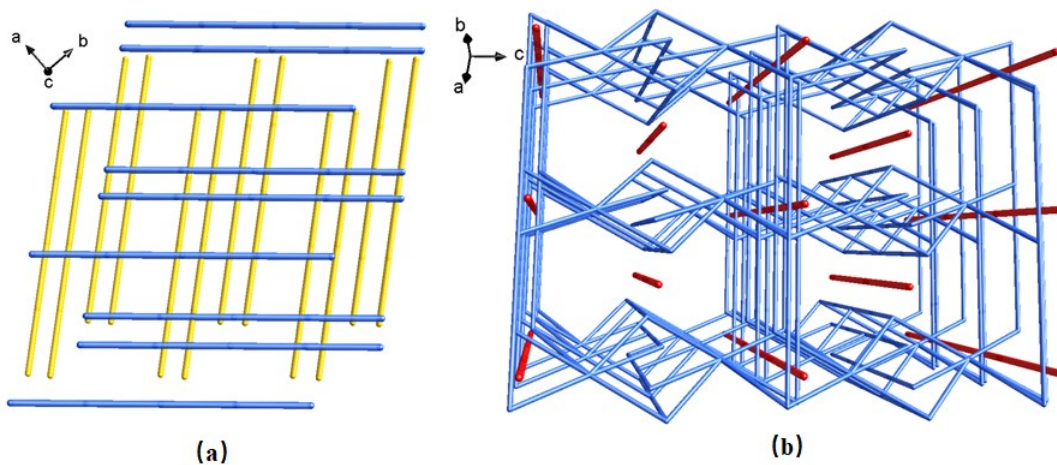


Fig. S3. The 3D framework of compound 4.

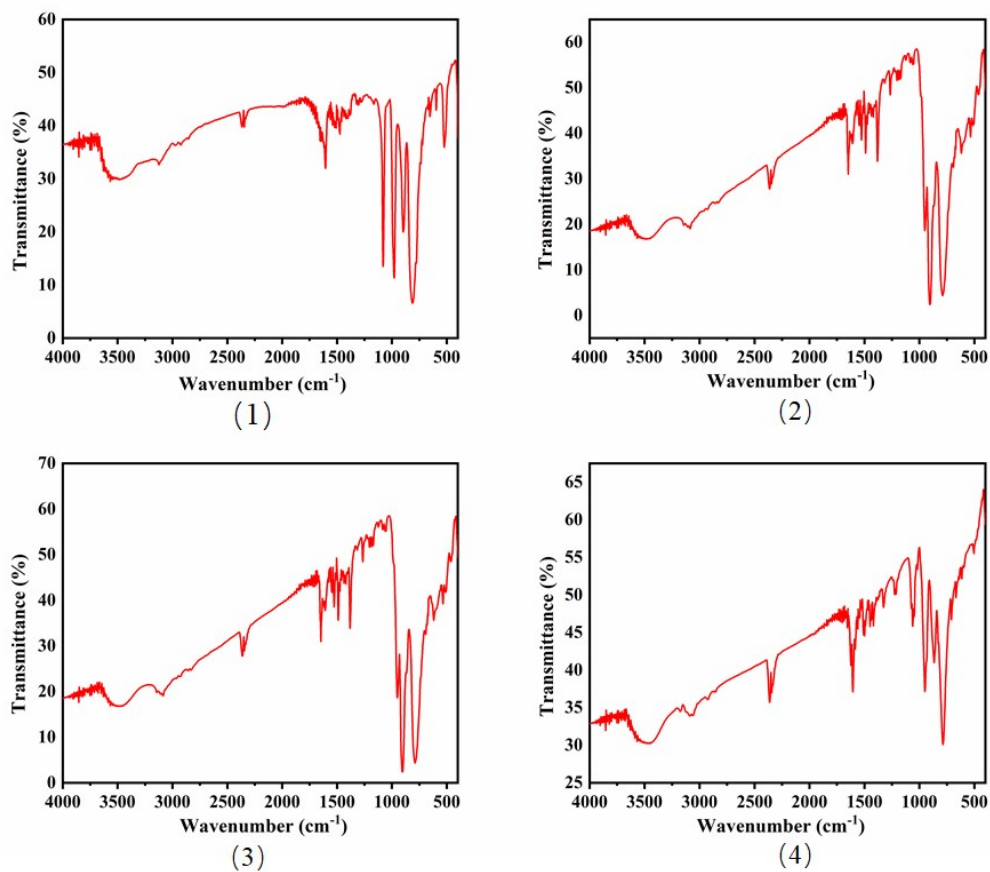


Fig. S4. The IR spectra of compounds 1–4.

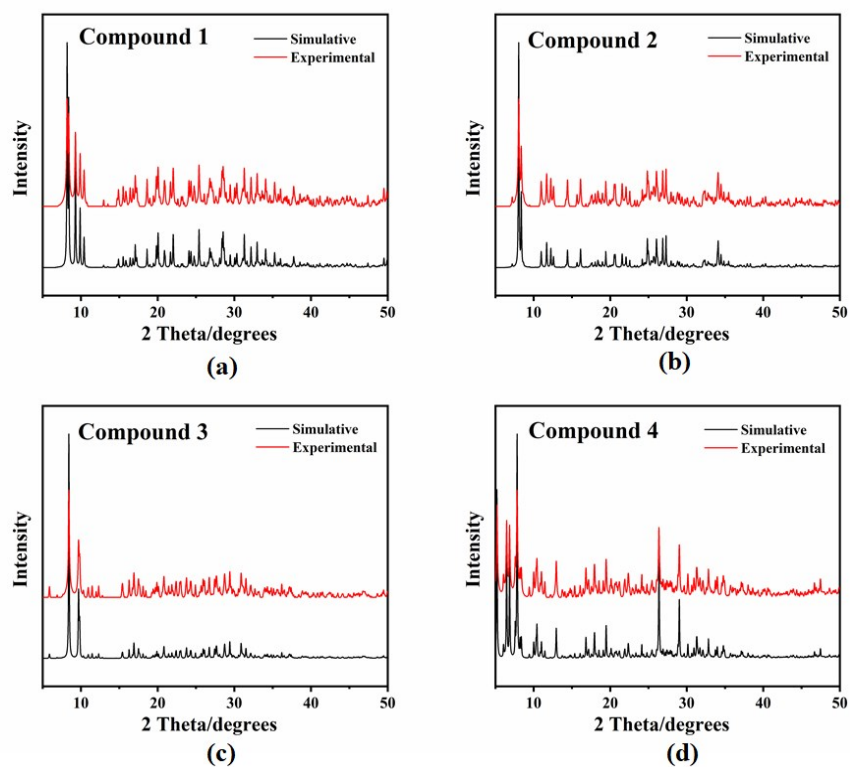


Fig. S5. The PXRD of compounds 1–4.

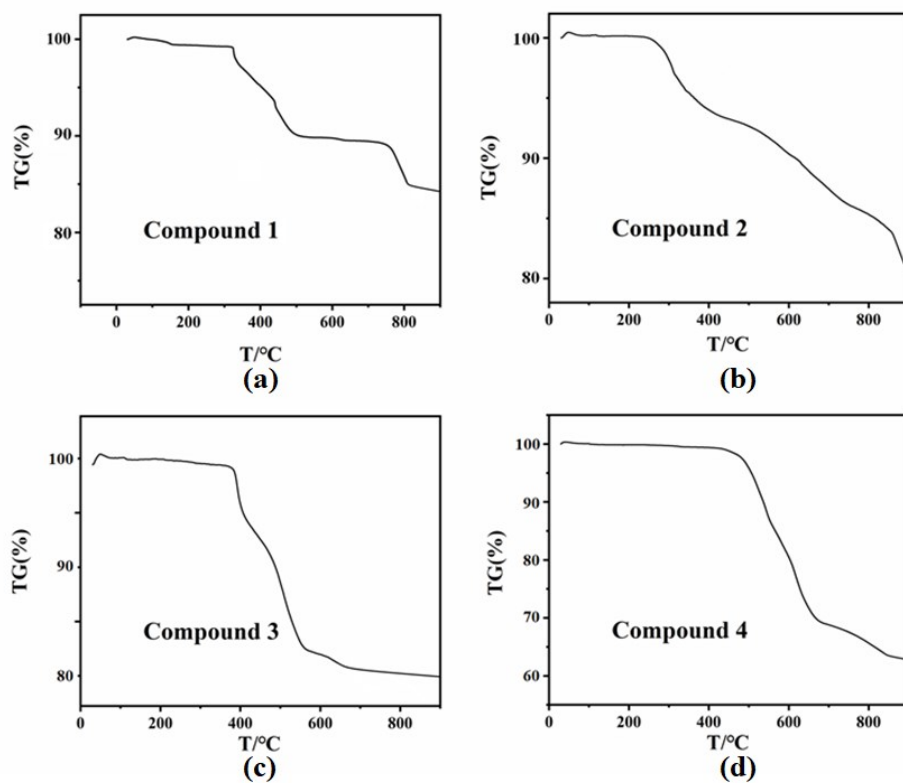


Fig. S6. The TG curves of compounds 1–4.

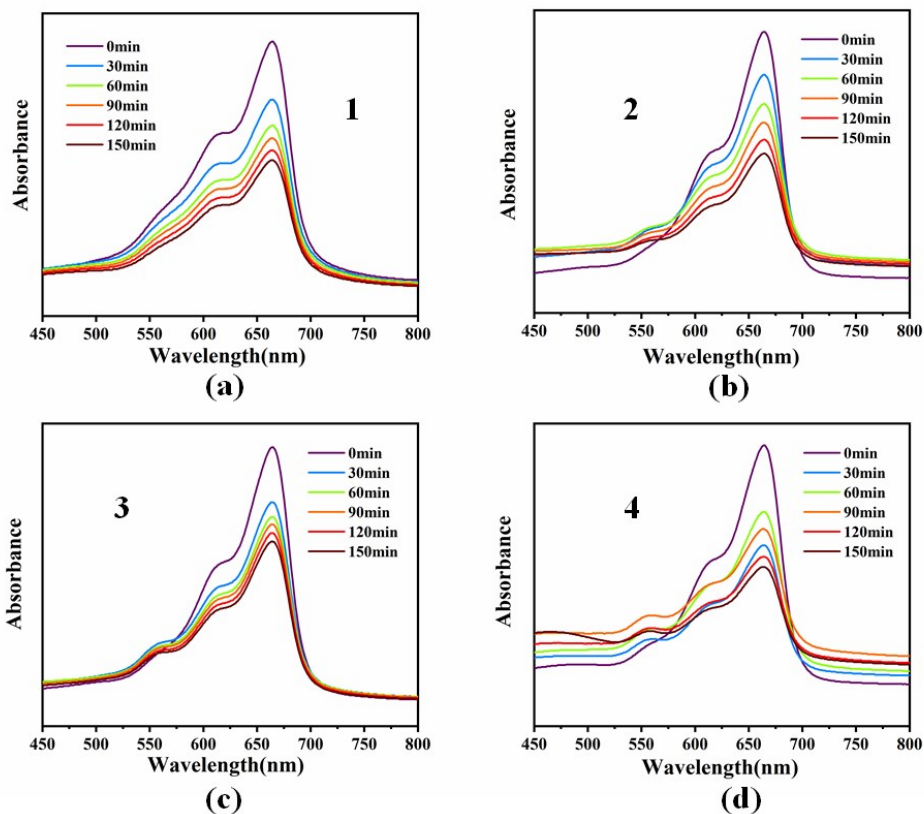


Fig. S7. The UV-vis absorption spectra of aqueous MB under UV light irradiation in the present of compounds 1–4 and no catalyst, respectively.

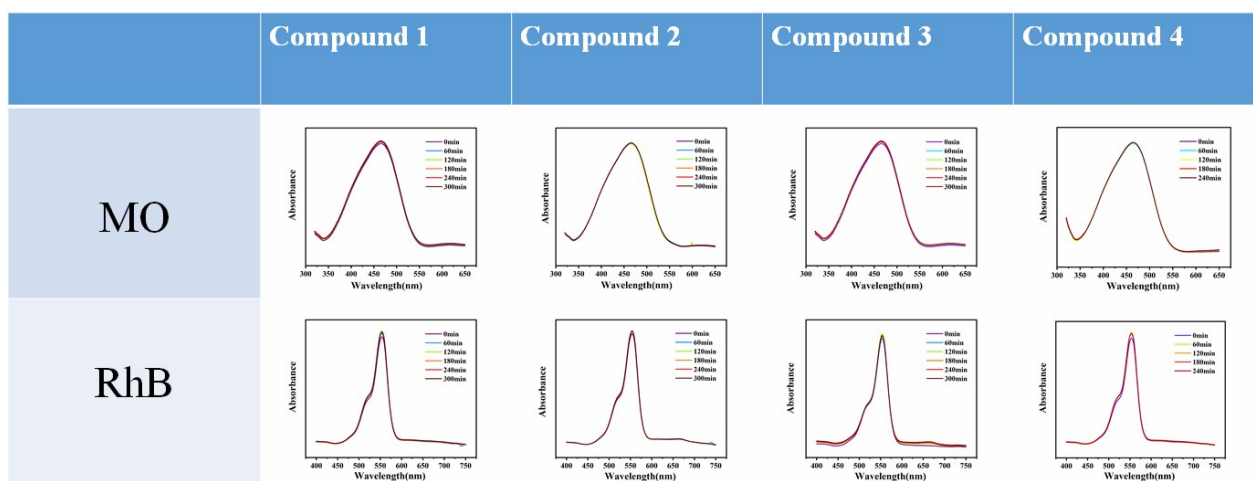


Fig. S8. The UV-vis absorption spectra of aqueous MO and RhB under UV light irradiation in the presence of compounds 1–4, respectively.

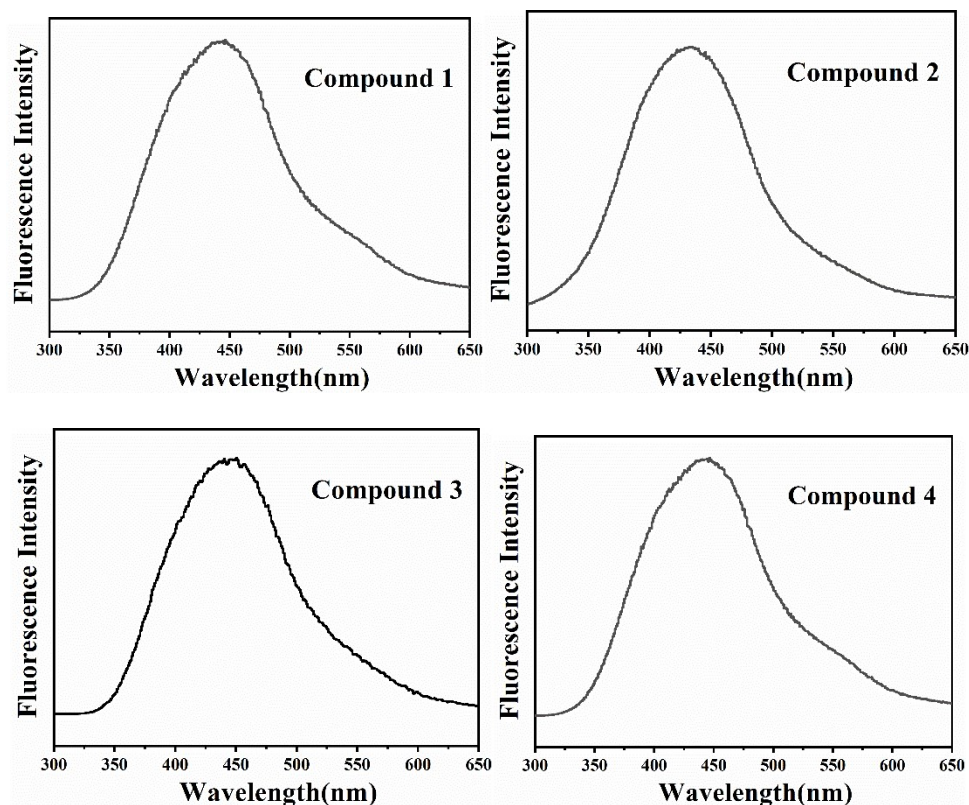


Fig. S9. Solid-state emission spectra of compounds 1–4 at room temperature.

Photoluminescence spectra of powder samples of compounds 1–4 at room temperature are shown in Fig. S9. It can be observed that both compounds 1–4 exhibit photoluminescence with an emission maximum at ca. 445, 443, 446 and 439 nm upon excitation at ca. 254 nm, respectively. The emission peaks would be assigned to ligand-to-metal charge transfer (LMCT) [1, 2].

[1] A.X. Tian, Z.G. Han, J. Peng, B.X. Dong, J.Q. Sha, B. Li, *J. Mol. Struct.* 2007, **832**, 117-123.

[2] C. Qin, X.L. Wang, E.B. Wang, Y.F. Qi, H. Jin, S. Chang, L. Xu, *J. Mol. Struct.* 2005, **749**, 138.