Supporting Information

Halogen-bridged metal–organic frameworks constructed from bipyridinium-based ligand: structures, photochromism and non-destructive readout luminescence switching

Xiao-Dong Yang,[a] Cheng Chen,[a] Ya-Jun Zhang,[a] Li-Xuan Cai,[a] BinTan[a] and Jie Zhang[ab]*

[a] *State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, Fujian 350002, P. R. China, E-mail: zhangjie@fjirsm.ac.cn*

[b] *MOE Key Laboratory of Cluster Science, School of Chemistry, Beijing Institute of Technology, Beijing 10081, P. R. China, E-mail: zhangjie68@bit.edu.cn*

****

Section 1. Kinetic rate calculations

The photochemical reactions of compounds **1** and **2** all exhibit first order kinetics which can be analyzed with eq[1]:

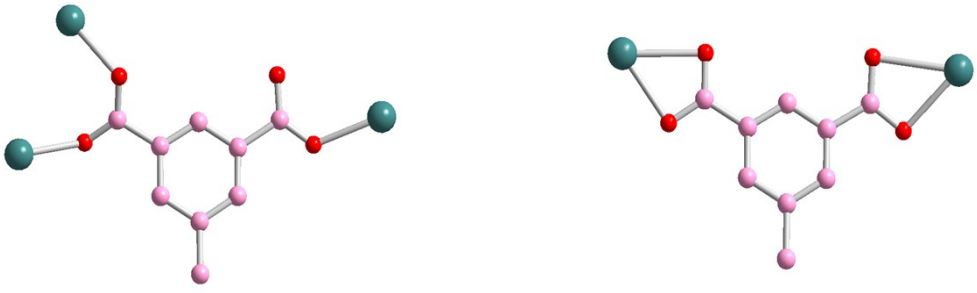
$$\ln\left(\frac{R_0 - R_\infty}{R_t - R_\infty}\right) = kt$$

where k is the first-order rate constant, R_0, R_t, R_∞ refer to the UV−vis diffuse reflectance intensity values (400nm for compound **1**, 410nm for compound **2**) at the beginning, versus time, and at the end of the reaction, respectively.

Reference

[1] J. Sworakowski, K. Janus and S. Nešpůrek, *Adv. Colloid Interface Sci.*, 2005, **116**, 97.

Section 2. Additional Data and Figures



(a) **(b)**

Fig.**S1**. The two coordination modes of the mip^{2-} ligands in compound **1**. (a) mode I: μ_3-η^1:η^1:η^1 :η^0; (b) mode II: μ_2-η^1:η^1:η^1:η^1.

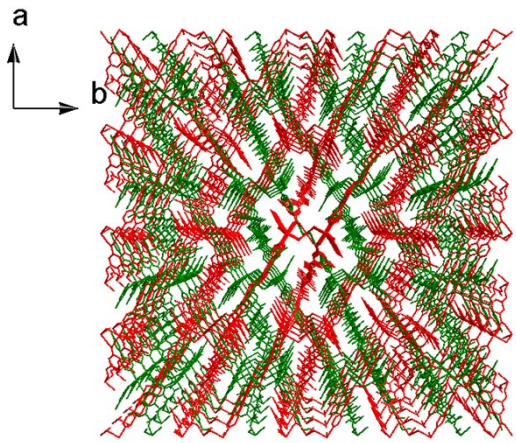


Fig.**S2**. The 2-fold interpenetrated structure in compound **1**.

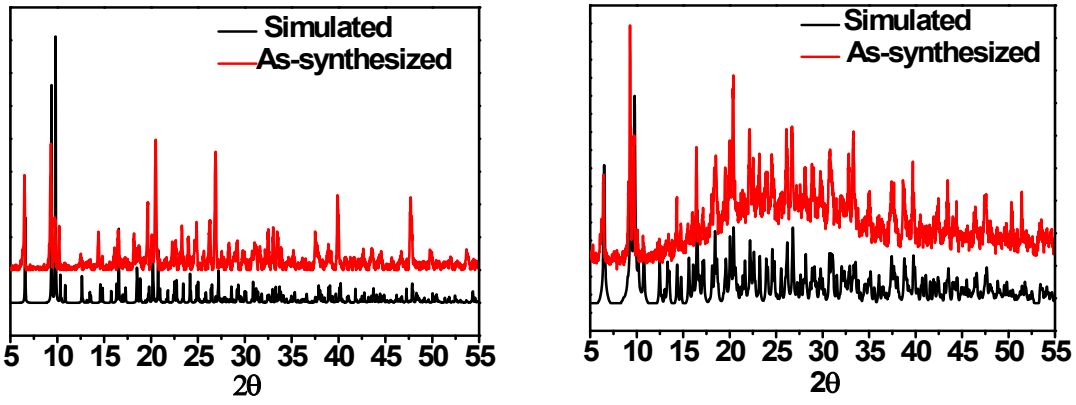


Fig.**S3**. PXRD patterns of compounds **1** (a) and **2** (b).

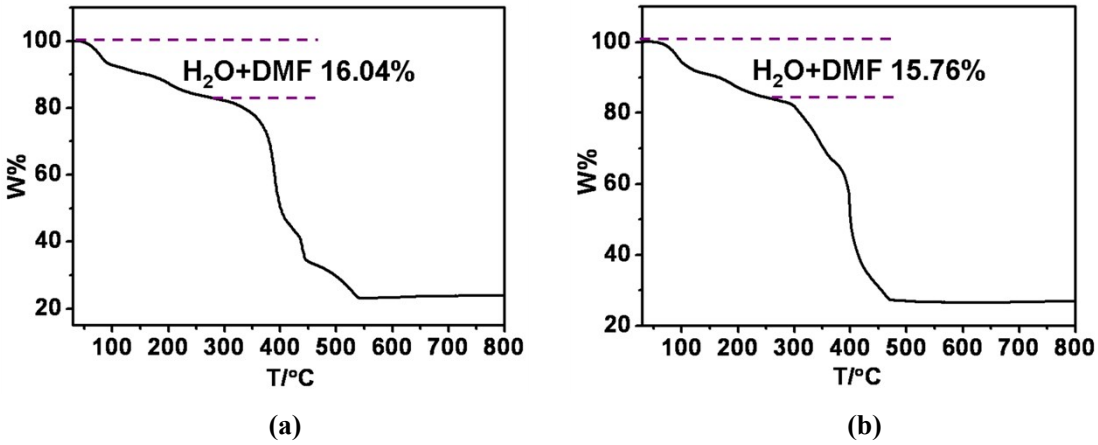
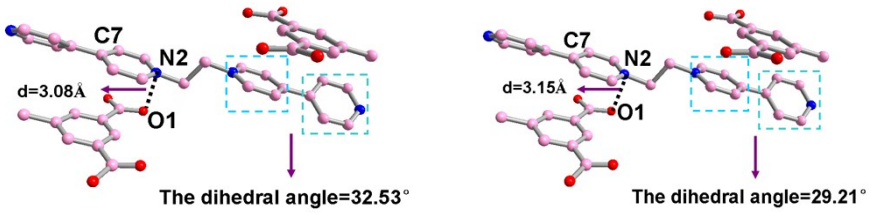


Fig.**S4**. TGA curves of compounds **1** (a) and **2** (b).



(a) **(b)**

Fig.**S5**. The orientation diagrams of mip^{2-} ligands and $Bpyen^{2+}$ ligands in compounds **1** (a) and **2** (b).

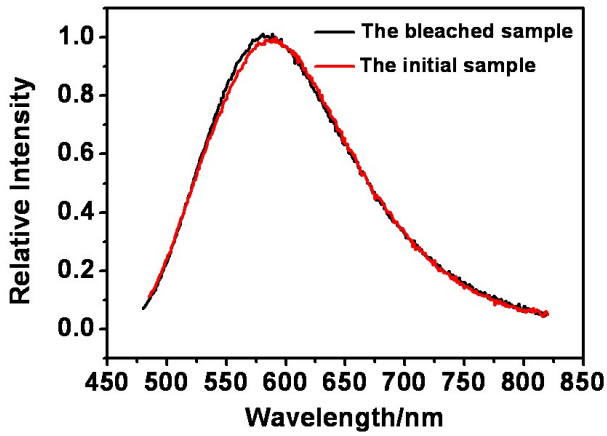
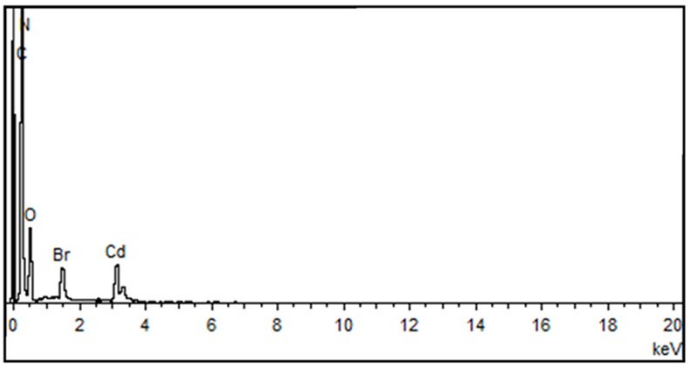
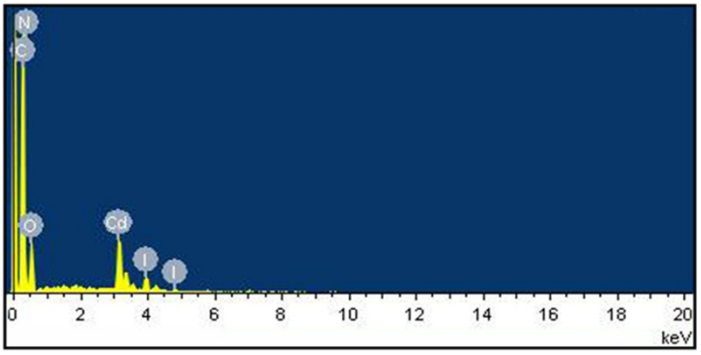


Fig.**S6**. The luminescence emission spectra of initial sample (red) and bleached sample (dark).



(a)



(b)

Fig.**S7**. Energy-dispersive X-ray spectroscopy analysis of compounds **1** (a), **2** (b) confirms the existence of elements Br or I in the structure, respectively.