

## Supporting Information for

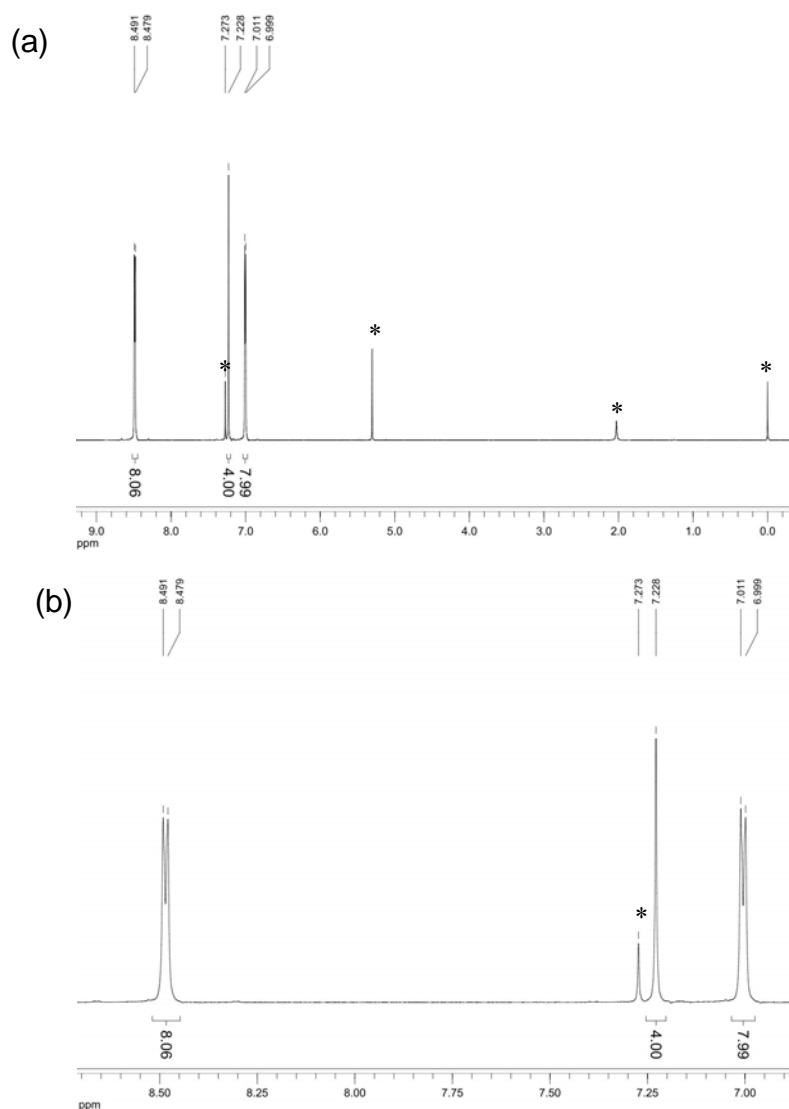
# Synthesis, Structures, and Photoluminescence of Zinc(II), Cadmium(II) and Mercury(II) Coordination Polymers Constructed from two novel tetrapyridyl Ligands

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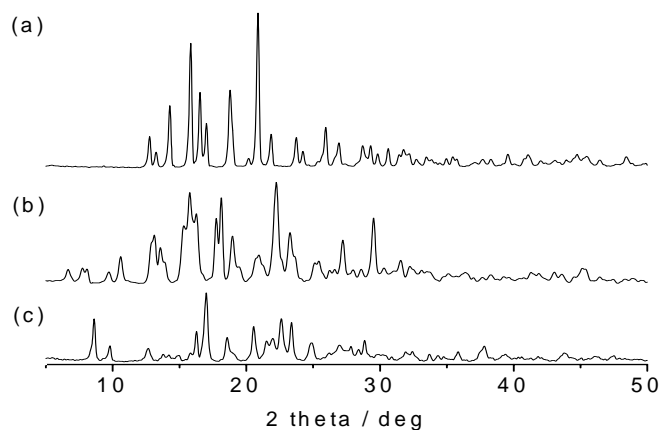
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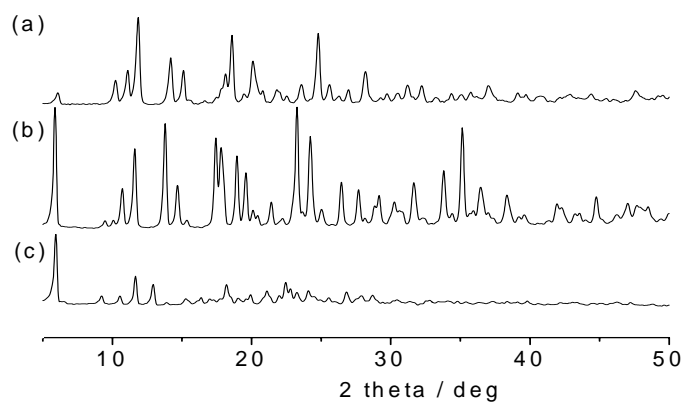


**Figure S1.** (a).  $^1\text{H}$  NMR spectrum of  $\text{L}^1$  in  $\text{CDCl}_3$ . (b) Low field region of  $^1\text{H}$  NMR spectrum of  $\text{L}^1$  in  $\text{CDCl}_3$ .

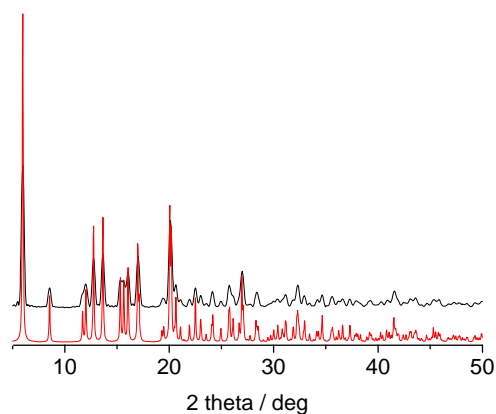




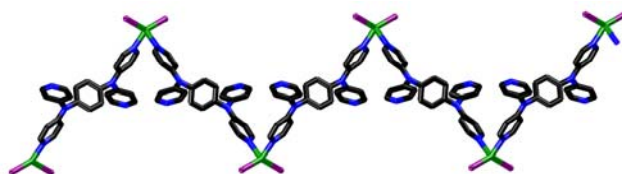
**Figure S3.** The PXRD patterns of complexes (a) **1**; (b) **2**; and (c) **3**.



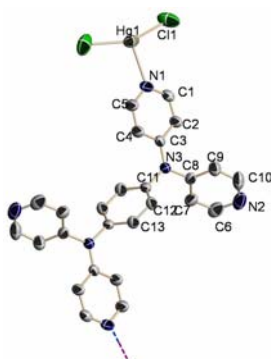
**Figure S4.** The PXRD patterns of complexes (a) **4**; (b) **5**; and (c) **6**.



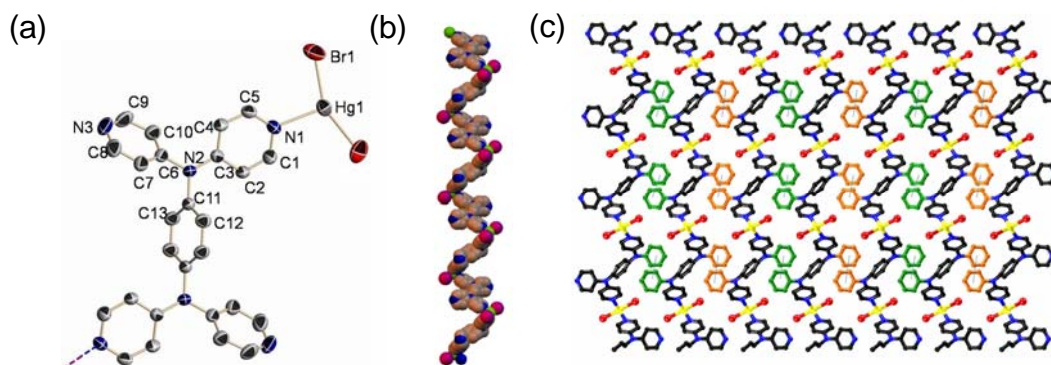
**Figure S5.** The PXRD patterns of complex **16**. Black: measured, Red: simulated.



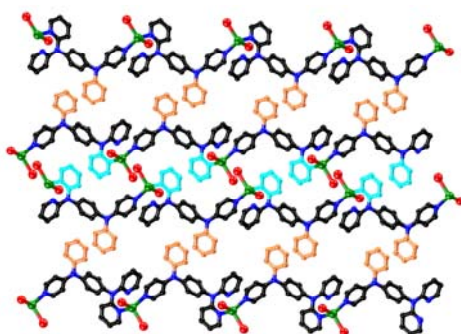
**Figure S6.** A zigzag chain structure of compound **6**: blue, N; black, C; green, Cd; purple, I. Hydrogen atoms have been omitted for clarity.



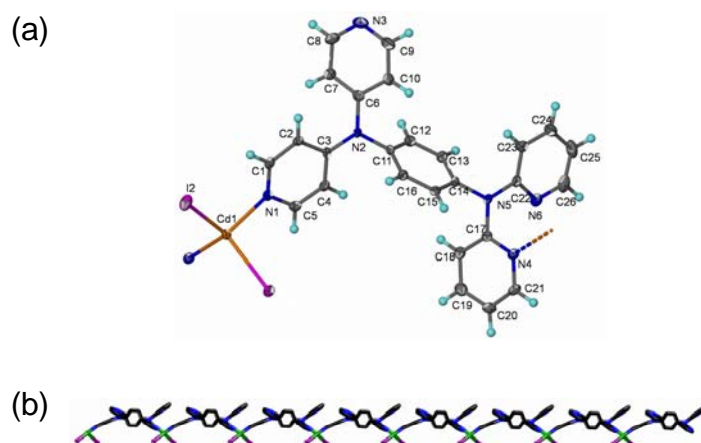
**Figure S7.** Molecular structure of compound **7** with thermal ellipsoids at the 50% probability level. Hydrogen atoms have been omitted for clarity.



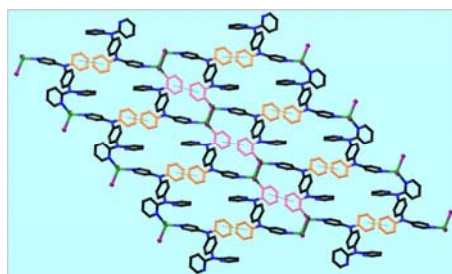
**Figure S8.** (a) Diagram showing the structure of compound **8** with thermal ellipsoids at the 50% probability level; (b) space-filling mode in compound **8**: blue, N; gray, C; green, Hg; magenta, Br; (c) 2D network viewed along the ac plane in compound **8**, showing  $\pi$ - $\pi$  stacking interactions between the pyridine rings. Hydrogen atoms have been omitted for clarity.



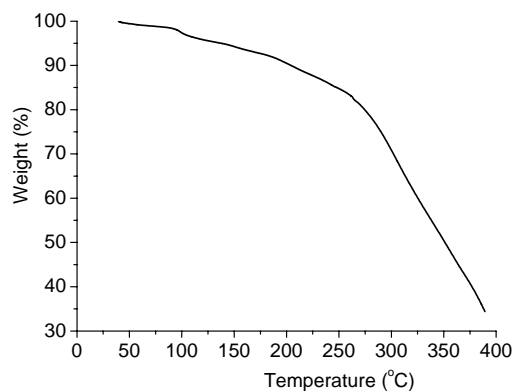
**Figure S9.** 2D network formed by interchain  $\pi$ - $\pi$ -stacking interactions in the crystal of compound **14**. Hydrogen atoms have been omitted for clarity.



**Figure S10.** (a) Diagram showing the structure of compound **15** with thermal ellipsoids at the 30% probability level; (b) one-dimensional (1D) centipede-like chain structure. Hydrogen atoms have been omitted for clarity.

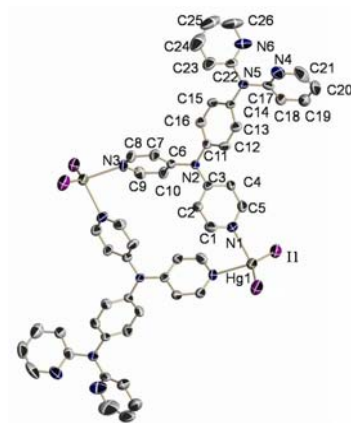


**Figure S11.** 2D network formed by inter-chain  $\pi$ - $\pi$ -stacking interaction between the pyridine rings of compound **15**. Hydrogen atoms have been omitted for clarity.



**Figure S12.** The TGA curve of complex **16**

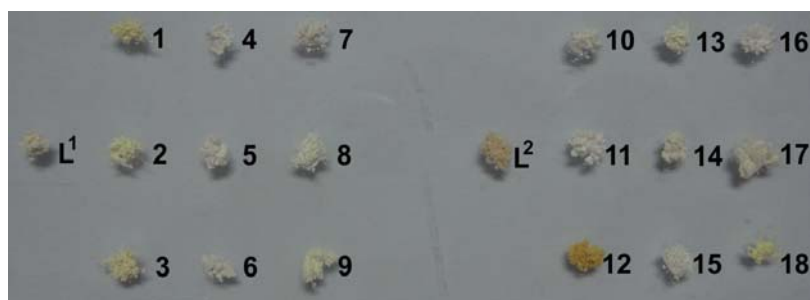
(a)



(b)



**Figure S13.** (a) Diagram showing the structure of compound **18** with thermal ellipsoids at the 30% probability level; (b) one-dimensional (1D) structure linked by O-H...N hydrogen bond. Hydrogen atoms and water have been omitted for clarity.



**Figure S14.** Photograph of L<sup>1</sup>, L<sup>2</sup>, and compounds **1~18** taken under ambient light.