Electronic Supplementary Information (ESI)

Novel Zn and Cd Coordination Polymers of 1,1′-(1,6-hexanediyl)bis-1*H*-benzimidazole: Solvothermal synthesis, crystal structures and photoluminescence properties

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(a) **(b)**

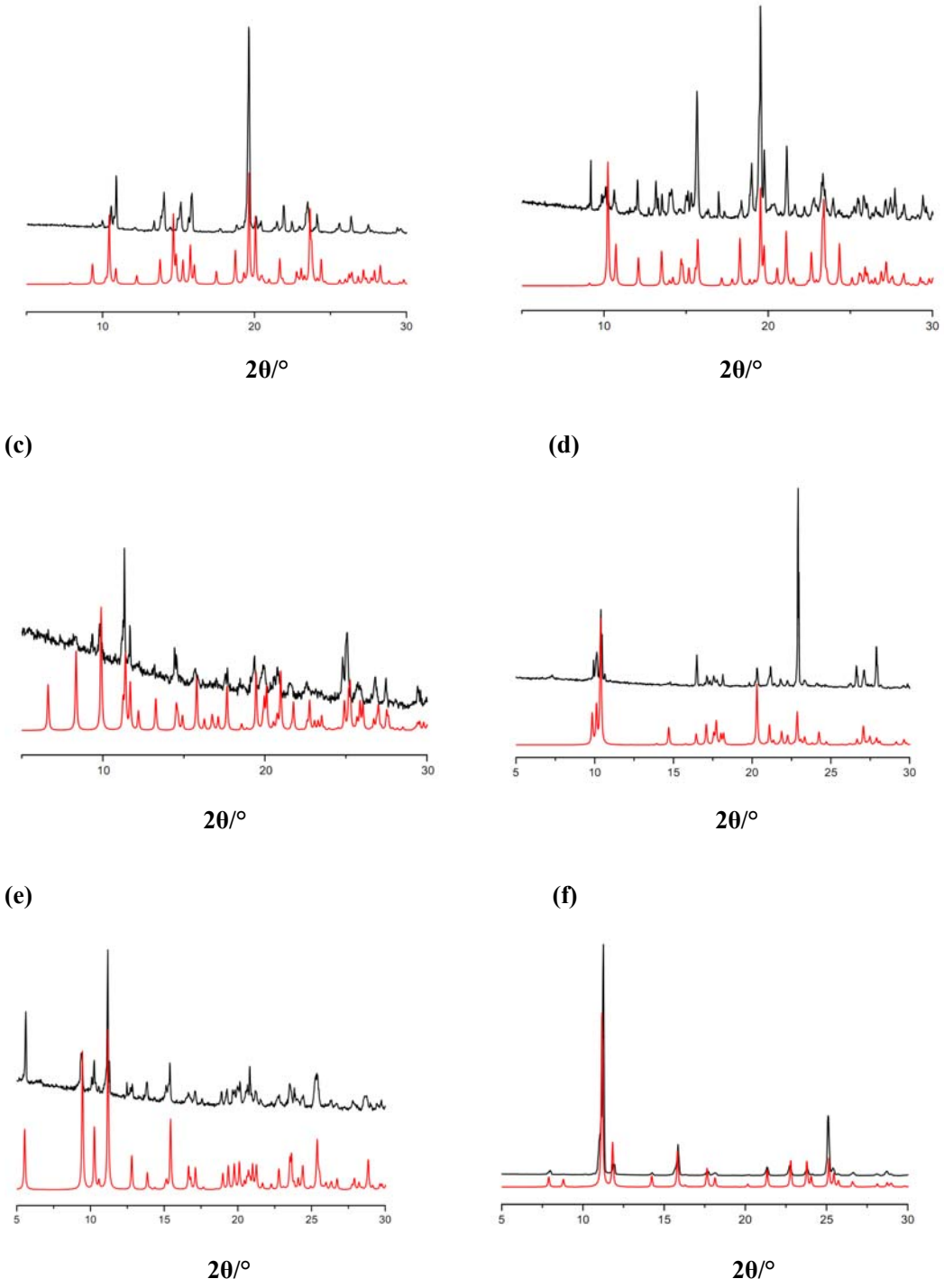
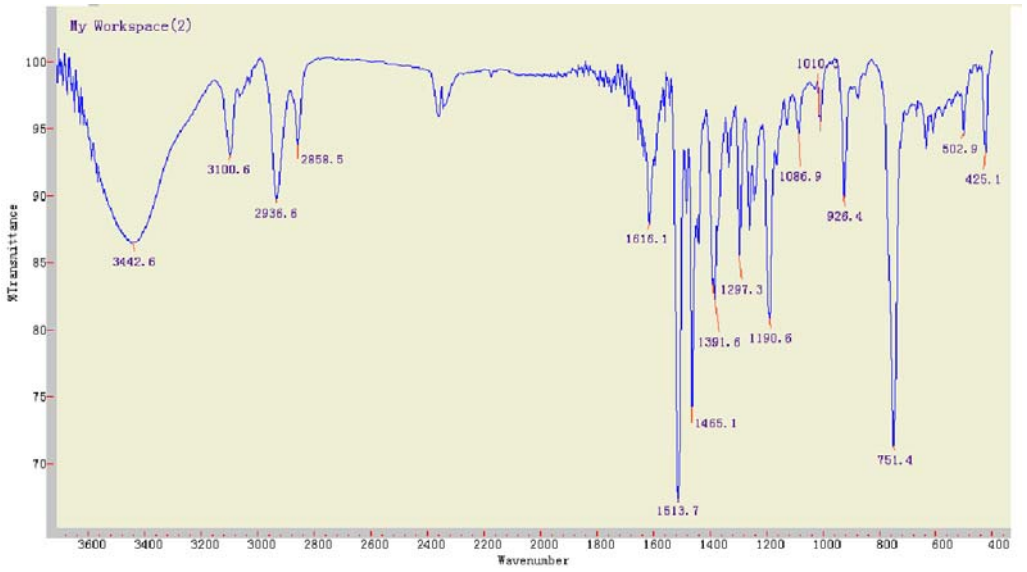


Fig. S1 Powder XRD patterns of (a) $[ZnCl_2(hbbm)]_n$ **(1)**; (b) $[ZnBr_2(hbbm)]_n$ **(2)**; (c) $\{[CdI_2(hbbm)]\cdot 0.5H_2O\}_n$ **(3)**; (d) $[CdCl_2(hbbm)_2]_n$ **(4)**; (e) $Cd_3(CH_3COO)_6(hbbm)_2]_n$ **(5)**; (f) $[Zn(CH_3COO)_2(hbbm)_{0.5}]_n$ **(6)**. Red: simulated from single crystal analysis. Black: experimental.

(a)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2858.5
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1513.7
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1297.3
1190.6
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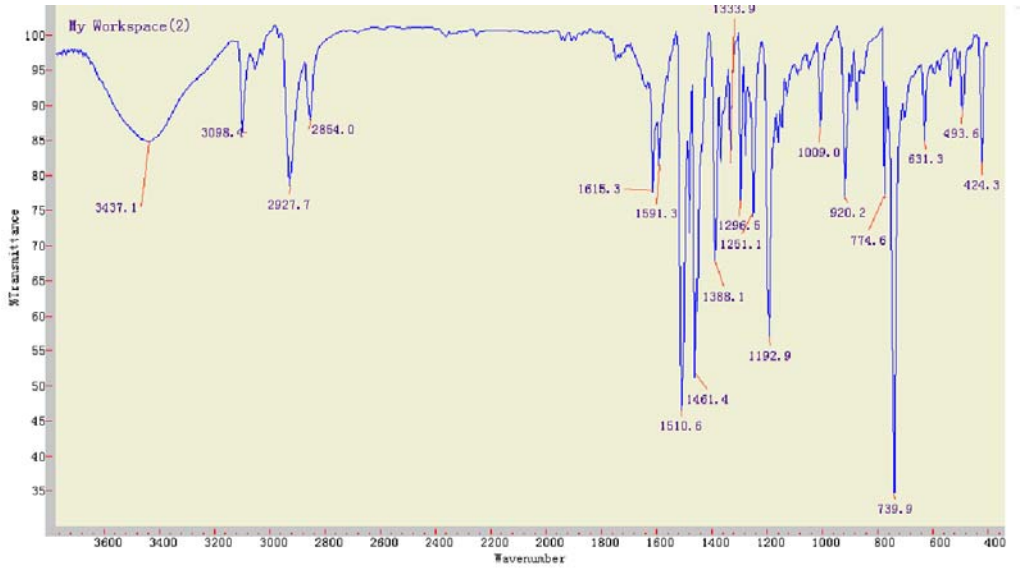
1010
926.4
751.4
602.9
425.1

(b)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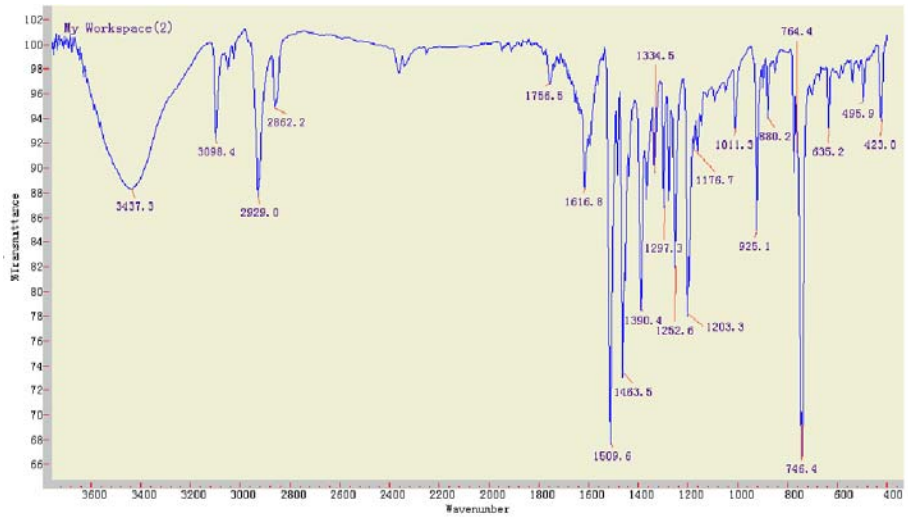
1192.9
1009.0
920.2
774.6
739.9
631.3
493.6
424.3

(c)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1297.3
1252.6
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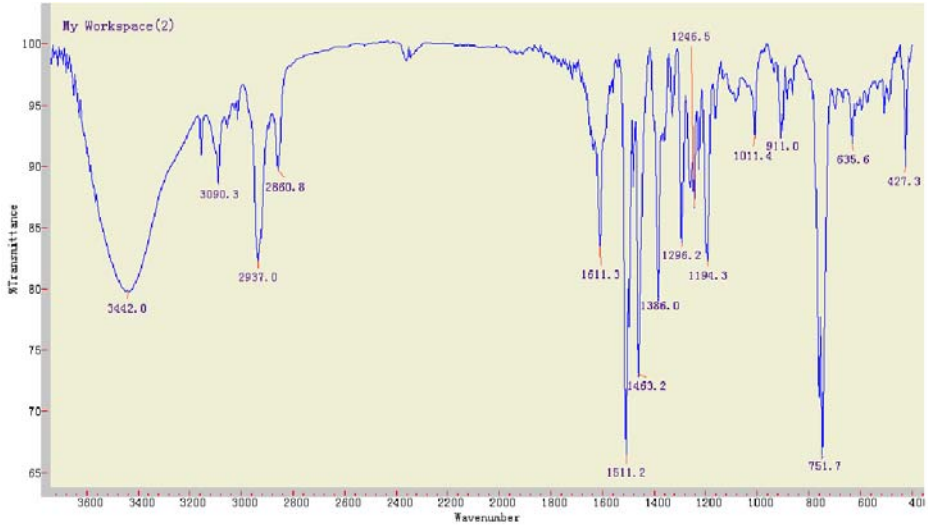
880.2
764.4
746.4
635.2
495.9
423.0

(d)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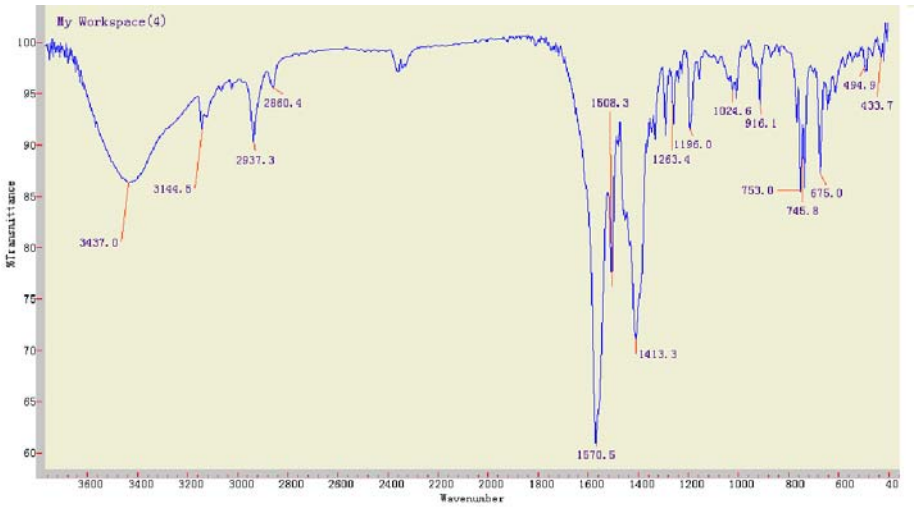
1011.4
911.0
751.7
635.6
427.3

(e)



(f)

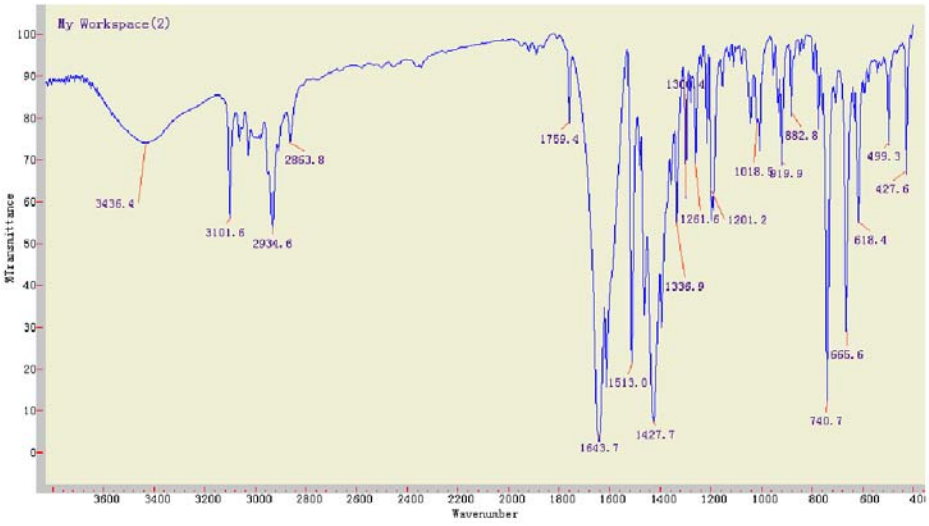


Fig. S2 The IR spectra of (a) $[ZnCl_2(hbbm)]_n$ (**1**); (b) $[ZnBr_2(hbbm)]_n$ (**2**); (c) $\{[CdI_2(hbbm)]\cdot 0.5H_2O\}_n$ (**3**); (d) $[CdCl_2(hbbm)_2]_n$ (**4**); (e) $[Cd_3(\eta,\mu\text{-}OAc)_2(\mu\text{-}OAc)_2(OAc)_2(hbbm)_2]_n$ (**5**); and (f) $[Zn_2(\mu\text{-}OAc)_4(hbbm)]_n$ (**6**).

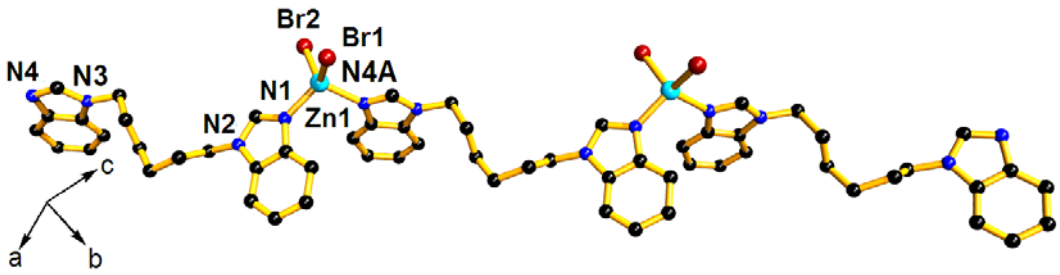


Fig. S3 View of a section of the 1D zigzag chain of **2**. All hydrogen atoms omitted for clarity. Symmetry code: (A) *x*, *y* + 1, *z* + 1

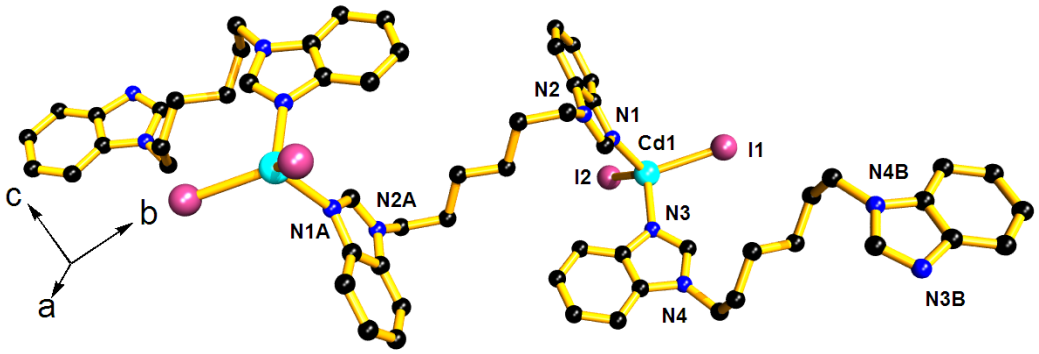


Fig. S4 View of a portion of the 1D zigzag chain of **3**. All hydrogen atoms omitted for clarity. Symmetry codes: (A) 1 - *x*, - *y* + 2, - *z* ; (B) 2 - *x*, - *y* + 1, - *z* + 1.

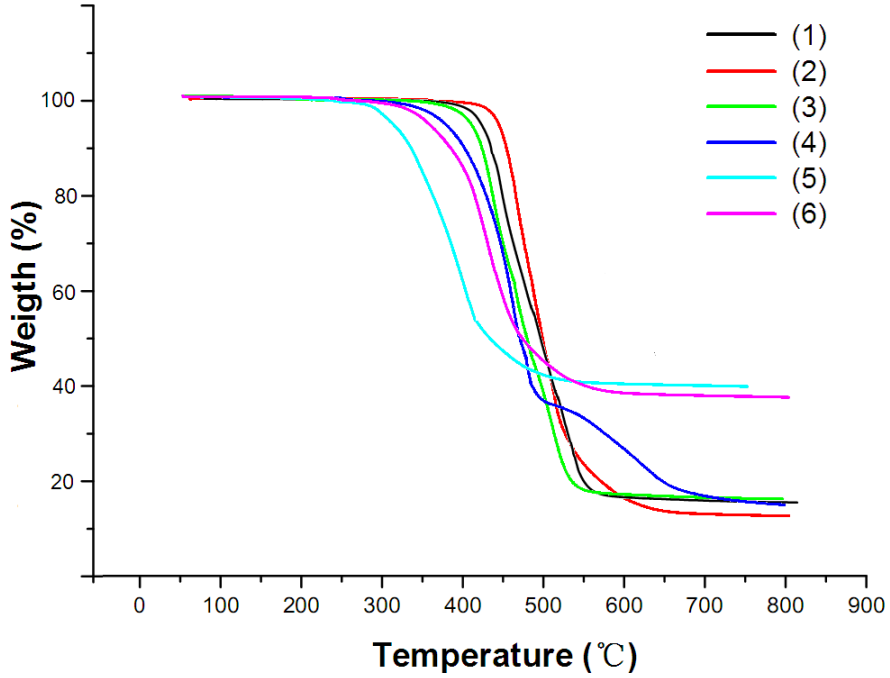


Fig. S5. The TGA curves of **1-6**.

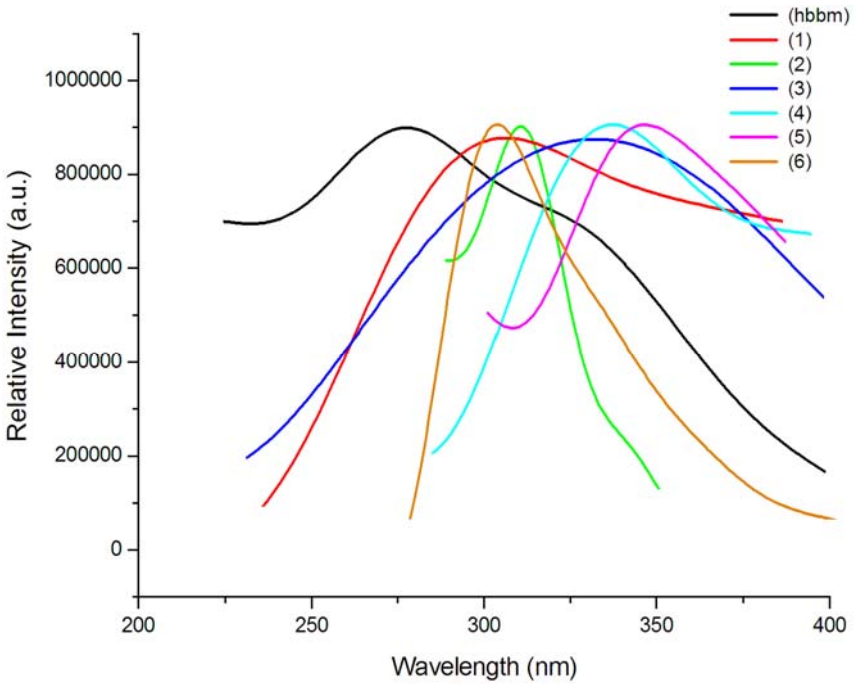


Fig. S6. Solid state excitation spectra of **1-6** and hbbm at ambient temperature.