Electronic Supplementary Material (ESI) for ChemComm.

Supporting Information

Asymmetric Induction in Homochiral MOFs: from Interweaving Double Helices to the Single Helices

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Powder X-ray Diffraction Studies

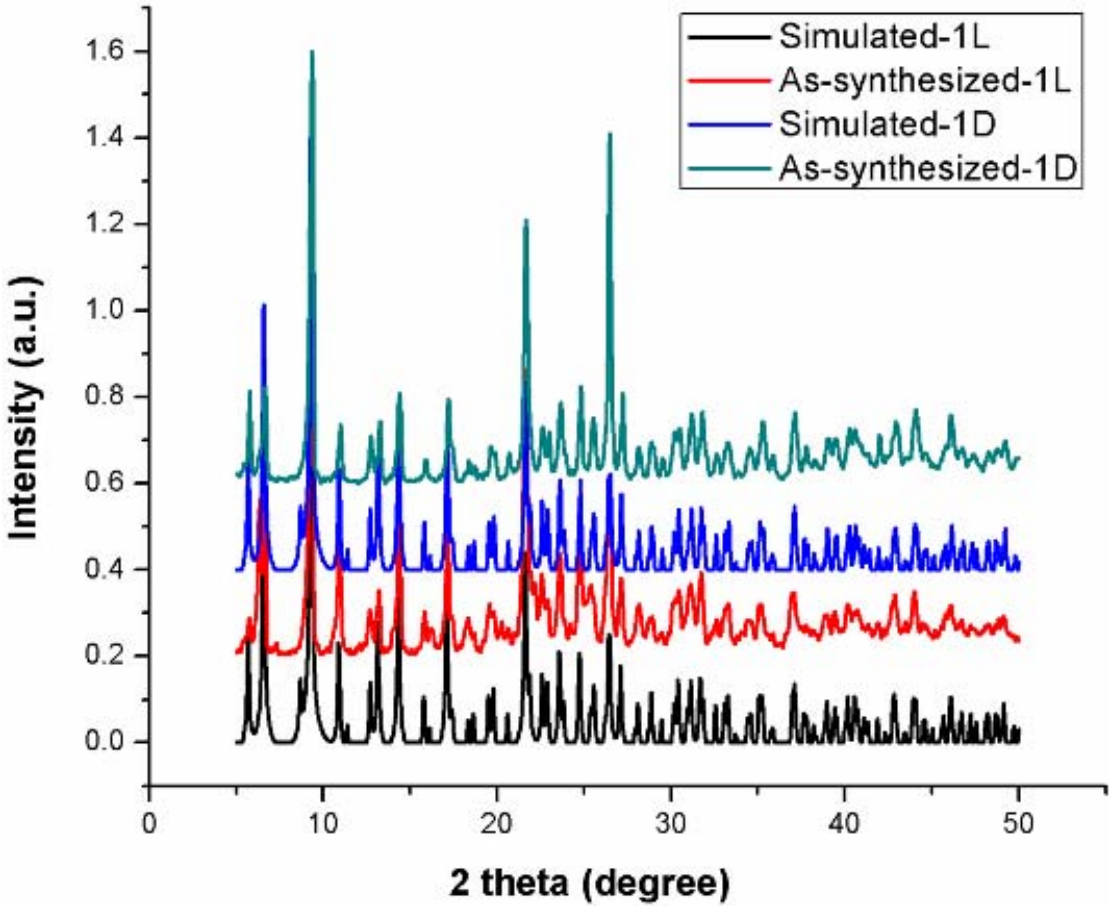

Figure. S1 The PXRD patterns of **1L** and **1D.**

The powder X-ray diffraction (PXRD) patterns of the two compounds are all in good agreement with the simulated ones indicating the purity of the crystals.

Thermogravimetric studies

Thermogravimetric analyses (TGA) were performed using a NETSCHZ STA-449C thermoanalyzer with a heating rate of 10°C/min under a nitrogen atmosphere.

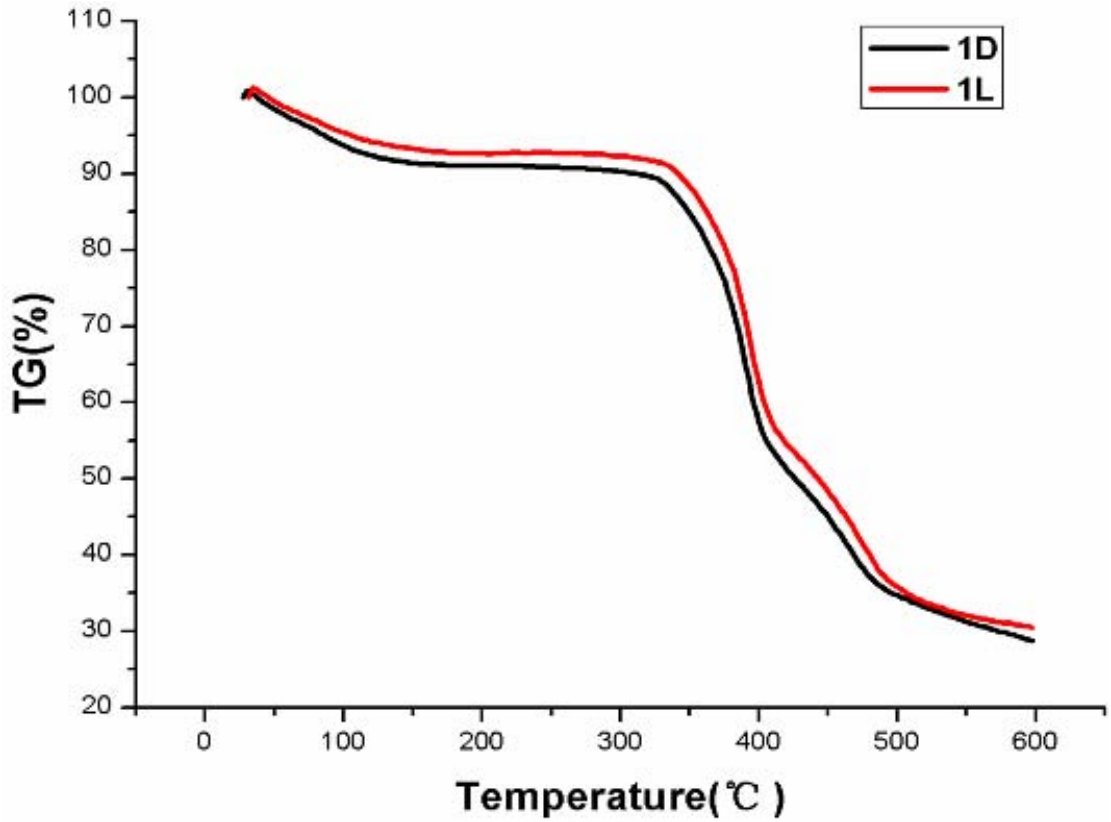

Figure. S2 The TG curves of **1L** and **1D.**

The weight losses are about 10% before the decomposition of the frameworks corresponding to the loss of the coordinated water molecules and the guest.

Solid-state circular dichroism (CD) measurements

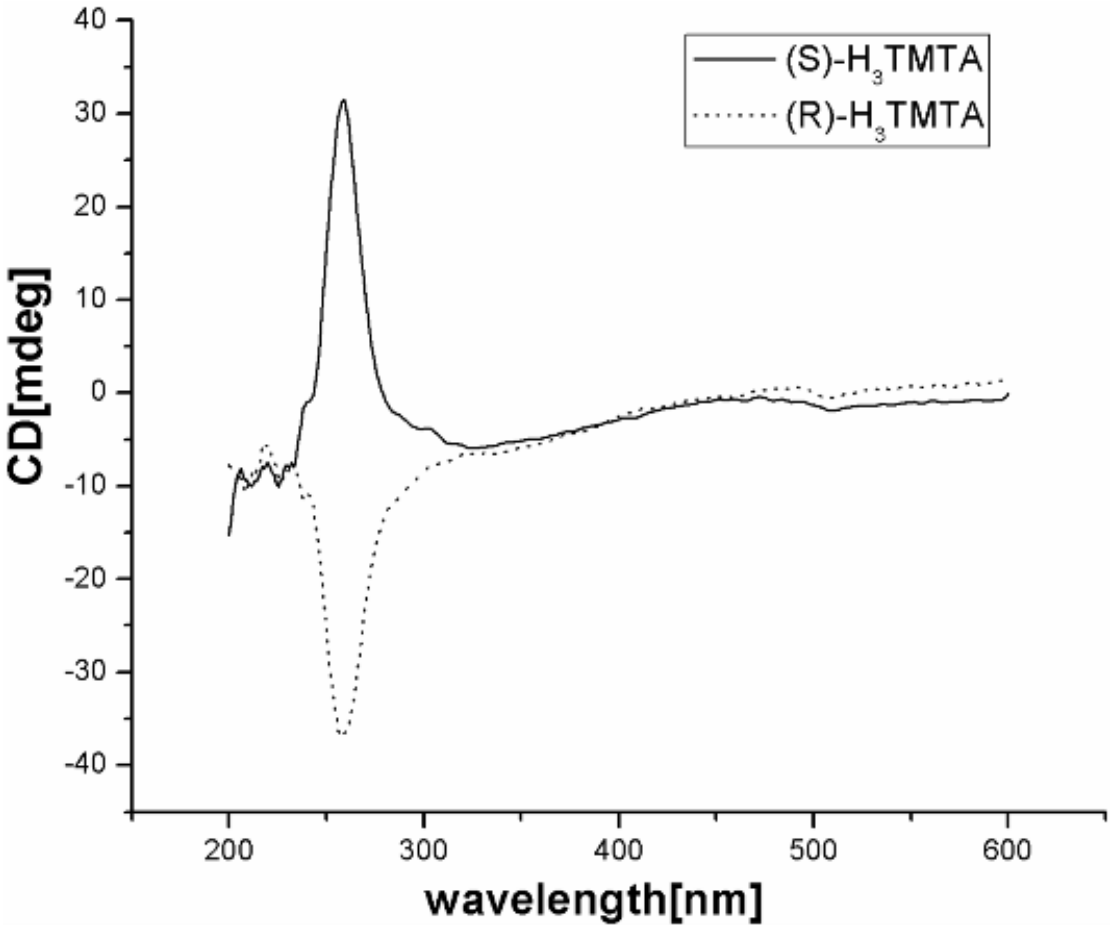

Figure. S3 The solid-state CD spectra of (S)-H_3TMTA and (R)-H_3TMTA ligands at room temperature.

Luminescence properties

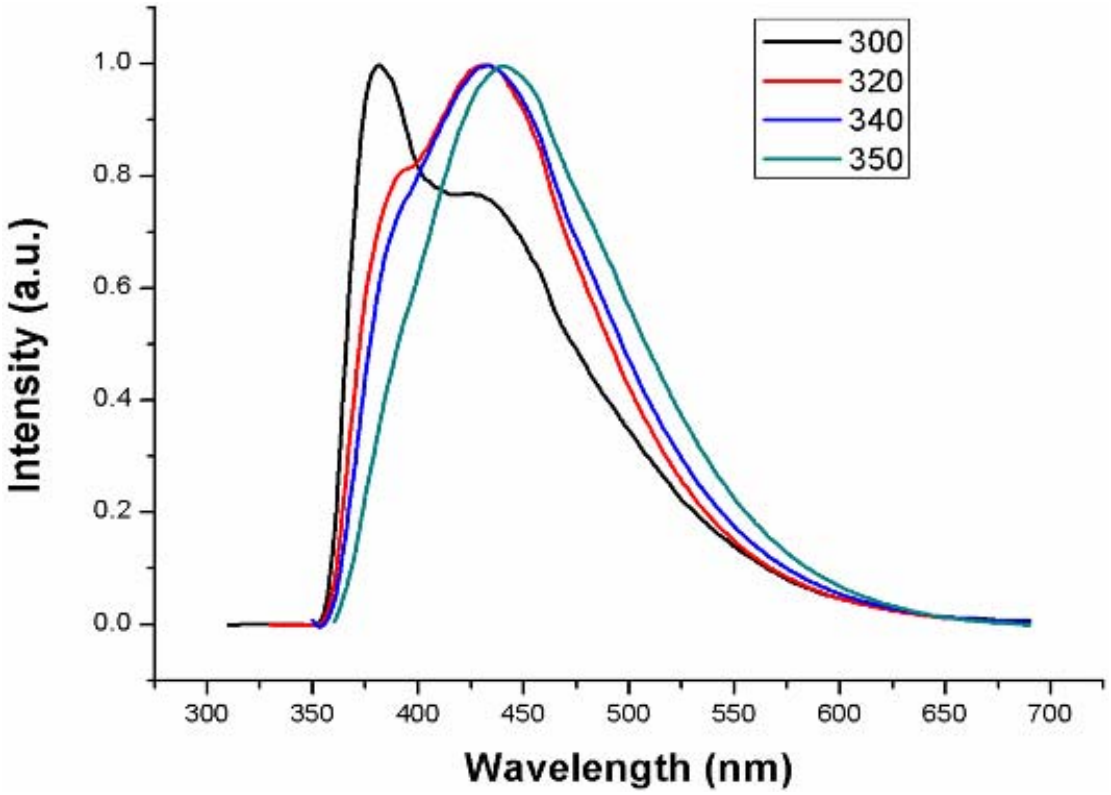

Fig. S4 The solid-state photoluminescence spectra of **1D** at room temperature excited by different wavelengths.

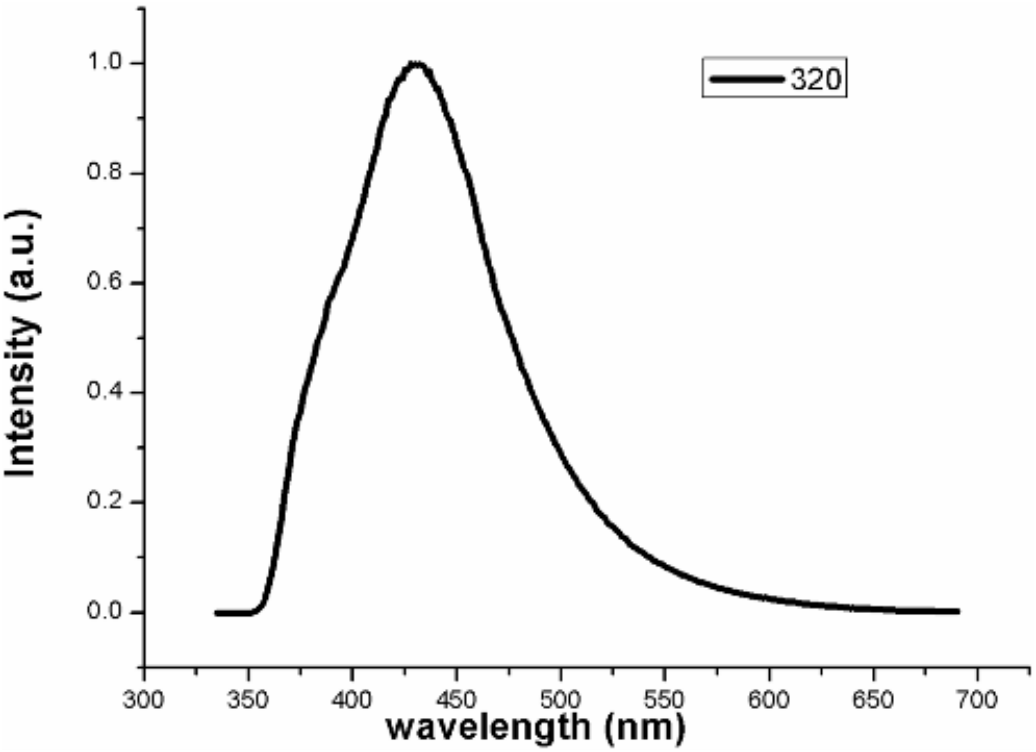

Figure. S5 The solid-state photoluminescence spectra of (R)-H_3TMTA ligands at room temperature.

Solid-state emission spectra of compound **1D** has been explored at room temperature, which contains two peaks at 392 and 430 nm when excited by 320 nm light. The free ligands (R)-H_3TMTA display a single emission band centered at 430 nm under 320 nm excitation. According to the literatures, the free 4,4'-bipyridine exhibit a weak peak at 390 nm upon excitation at 318 nm.[1] Hence, we can speculate that the peaks may be ascribed to the intraligand π-π* transitions.

The manner of energy transfer is controllable which has been shown in the tunable ratio of the two peaks contributing to the photoluminescence by varying the excitation wavelength.[2] The energy can be transferred through (R)-H_3TMTA ligands and 4,4'-bipyridine at the same time or the one. With the increasement of the excitation wavelength from 300 nm to 320 nm, the higher-energy emission peak becomes weak and the lower-energy emission peak gets strong. Upon further increasing the wavelength of the excitation light, the higher-energy emission peak disappears and the lower-energy emission peak becomes the only band in the emission spectra. It indicates that the energy transfer through the intraligand π-π* transitions of the (R)-H_3TMTA ligands become dominant with the increasement of the excitation wavelength.

IR spectroscopy

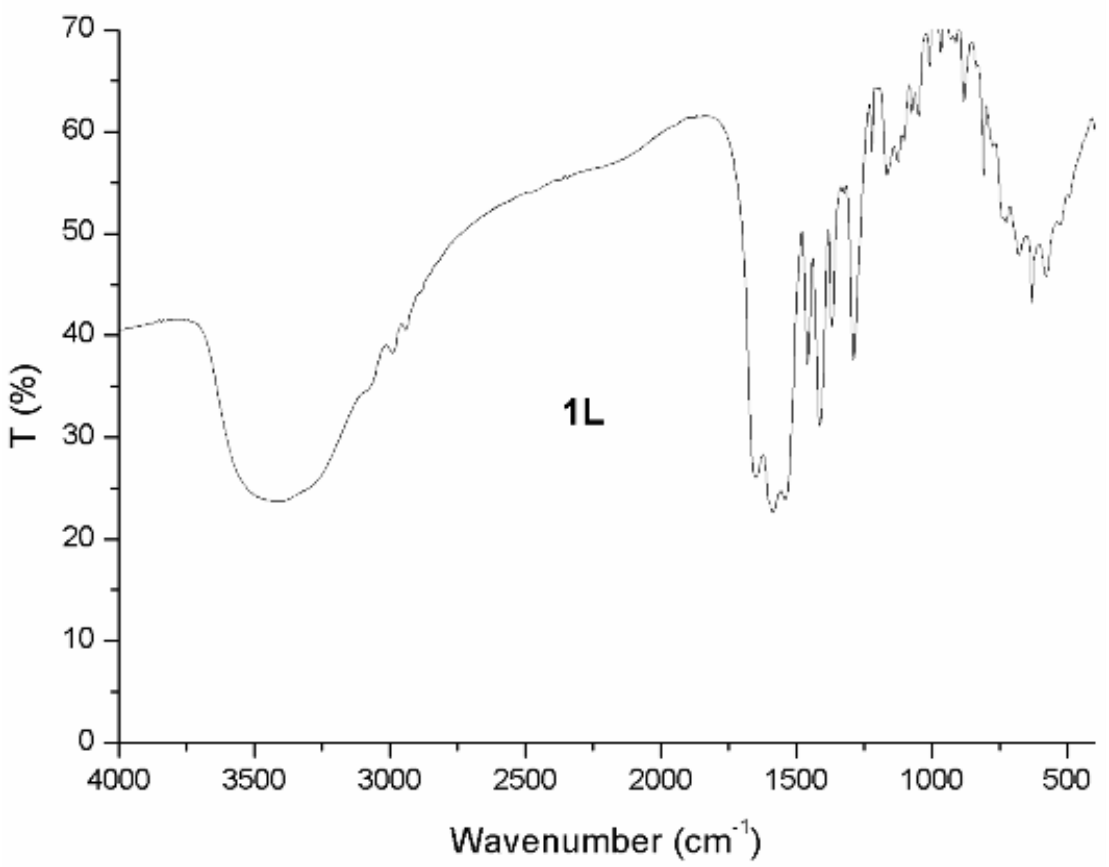

Figure. S6 The IR spectrum of **1L**.

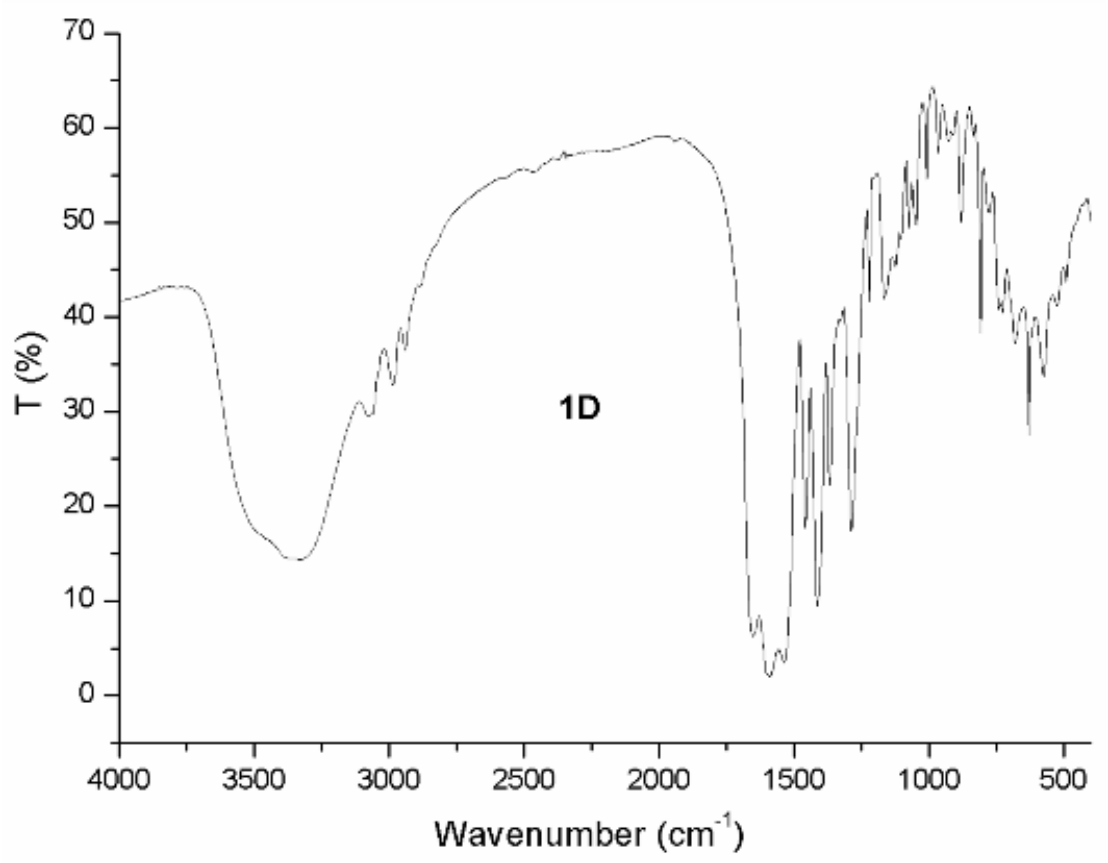

Figure. S7 The IR spectrum of **1D**.

Reference

1. (a) J. J. Wang, C. S. Liu, T. L. Hu, Z. Chang, C. Y. Li, L. F. Yan, P. Q. Chen, X. H. Bu, Q. Wu, L. J. Zhao, Z. Wang, X. Z. Zhang, *CrystEngComm*, 2008, **10**, 681; (b) X. Z. Song, S. Y. Song, S. N. Zhao, Z. M. Hao, M. Zhu, X. Meng, H. J. Zhang, *Dalton Trans.*, 2013, **42**, 8183.

2. (a) H. B. Zhang, P. Lin, X. C. Shan, F. L. Du, Q. P. Li, S. W. Du, *Chem. Commun.*, 2013, **49**, 2231; (b) H. B. Zhang, X. C. Shan, Z. J. Ma, L. J. Zhou, M. J. Zhang, P. Lin, S. M. Hu, E. Ma. R. F. Li, S. W. Du, *J. Mater. Chem. C*, 2014, **2**, 1367; (c) L. Wang, E Yang, H. B. Zhang, J. Zhang, *ChemPlusChem*, 2014, **79**, 1080.