Electronic Supplementary Material (ESI) for CrystEngComm.

Supporting information

Sythesis of Zeolite-like Metal-organic Frameworks from a Dual-ligand Strategy

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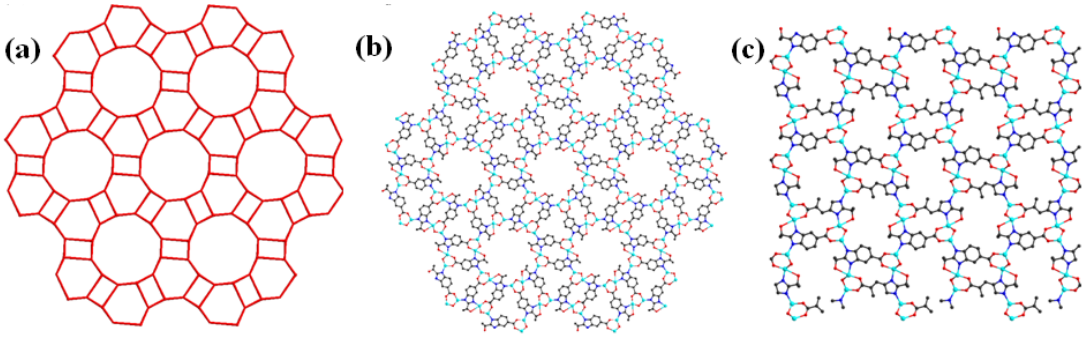

Figure S1 (a) $AlPO_4$-5 layer, (b) the layer generated by ebimc ligands and dizinc units within compound **1**, (c) the layer generated by ebimc ligands and dizinc units within compound **2**.

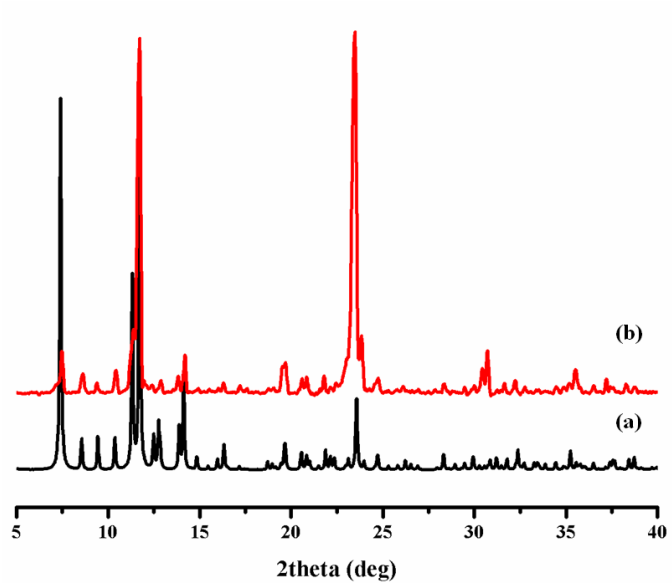

Figure S2 The powder XRD patterns of **(1)**. (a) simulated **(1)**; (b) as-synthesized **(1)**

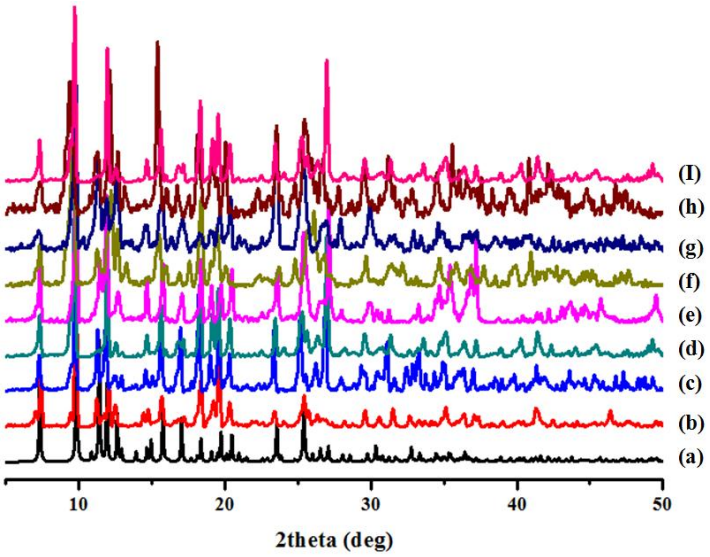

Figure S3 The powder XRD patterns of **(2)** under different conditions. (a) simulated

(2); (b) as-synthesized **(2)**; (c) **(2)** soaked in DMF; (d) **(2)** soaked in ethanol; (e) **(2)** soaked in H_2O; (f) **(2)** soaked in methanol; (g) **(2)** soaked in acetone; (h) **(2)** soaked in CH_2Cl_2; (I) activated **(2)**.

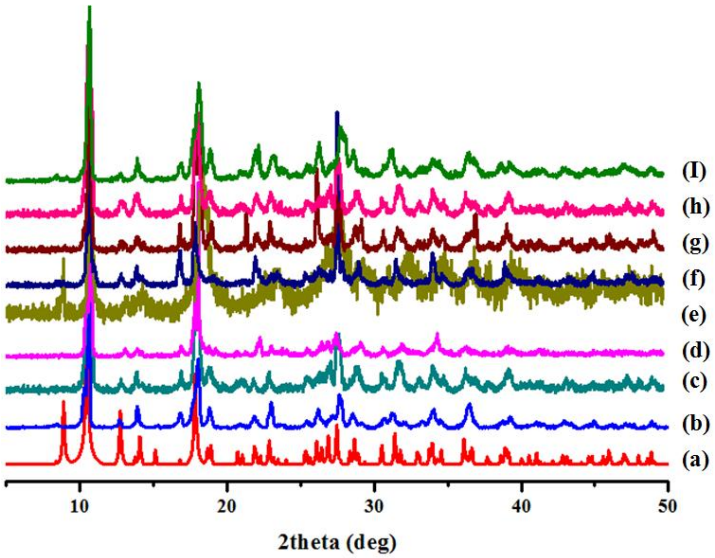

Figure S4 The powder XRD patterns of **(3)** under different conditions. (a) simulated **(3)**; (b) as-synthesized **(3)**; (c) **(3)** soaked in DMF; (d) **(3)** soaked in ethanol; (e) **(3)** soaked in H_2O; (f) **(3)** soaked in methanol; (g) **(3)** soaked in acetone; (h) **(3)** soaked in CH_2Cl_2; (I) activated **(3)**.

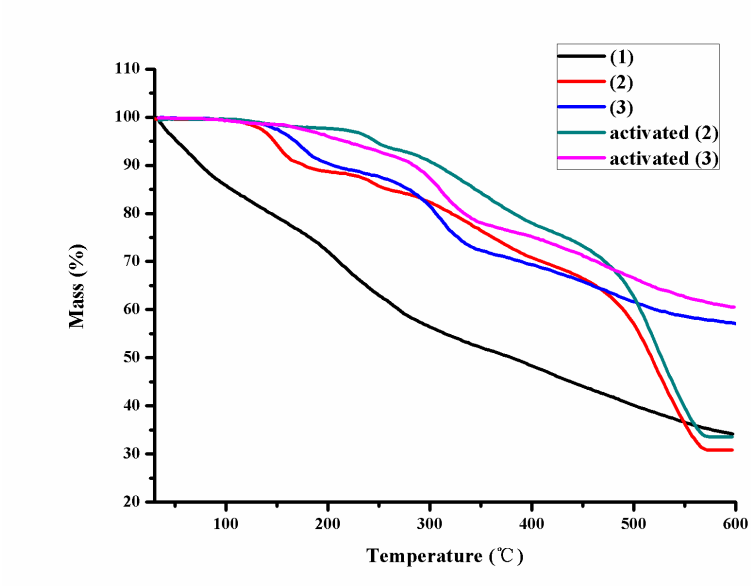

Figure S5 The TG plots of compounds **(1), (2)** and **(3).**

In compound 2, the number of residual electrons after SQUEEZE is 12.5, corresponding to 5/4 water molecules. However, from the TG plot, the initial gradual weight-loss step of 13% in the

TGA, which indicates one guest DMF molecule and one water molecule per $Zn_2(\mu_2\text{-}OH)(ebimc)(5\text{-}mtz)$ unit for compound 2. As for 1, we identify one DMF per $Zn_2(\mu_2\text{-}OH)(ebimc)(5\text{-}mtz)$ unit. Considering its poor stability and no obvious platform on the TG plot, so it's meaningless to use this method to determine the remaining disordered solvent.

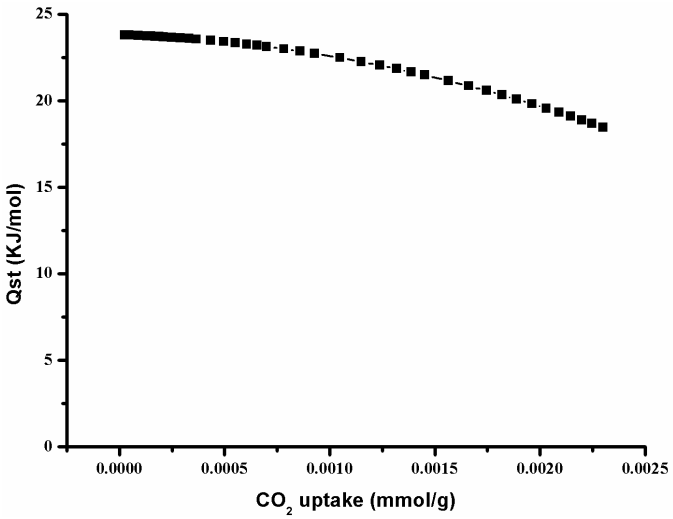

Figure S6. The isosteric heat of CO_2 adsorption for **2** estimated by Viral equation.

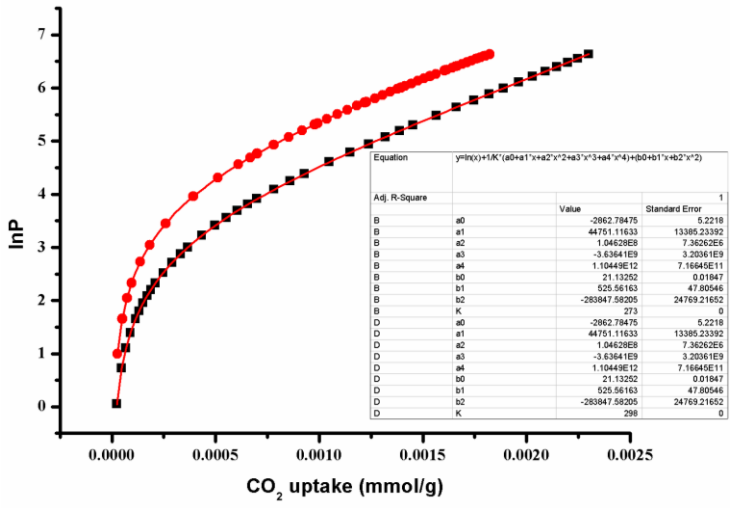

Figure S7 Virial analysis of the CO_2 sorption data for compound 2.

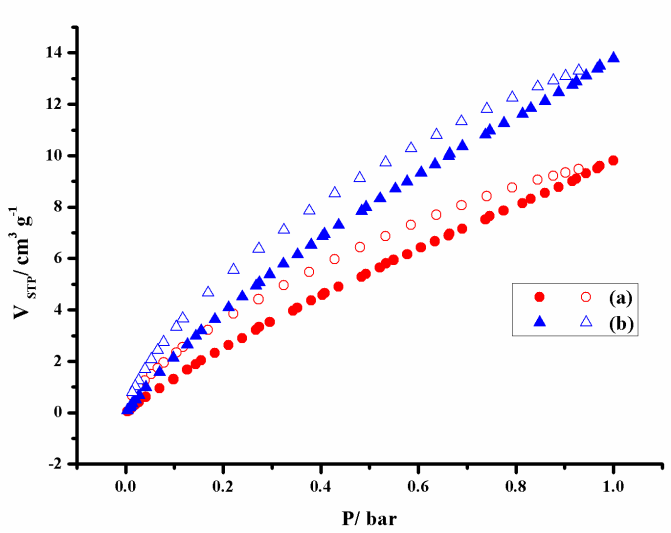

Figure S8 The sorption isotherms of **(3)**. The CO_2 adsorption and desorption (a) at 298K; the CO_2 adsorption and desorption (b) at 273K.

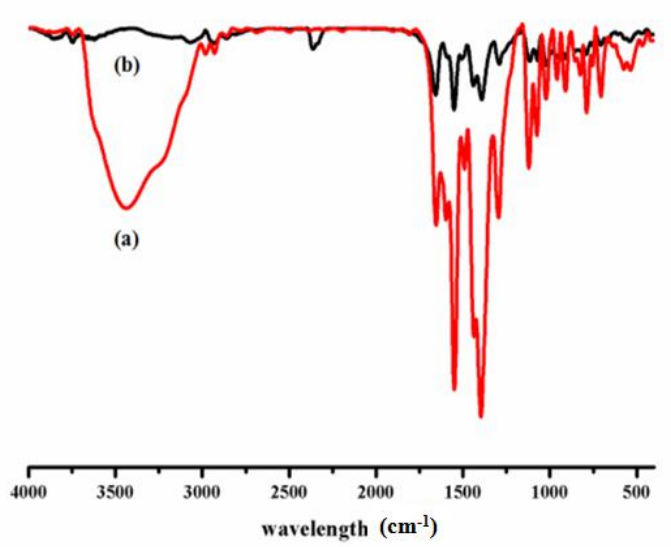

Figure S9 The IR plots of (**2**); (b) the IR plots of activated (**2**).

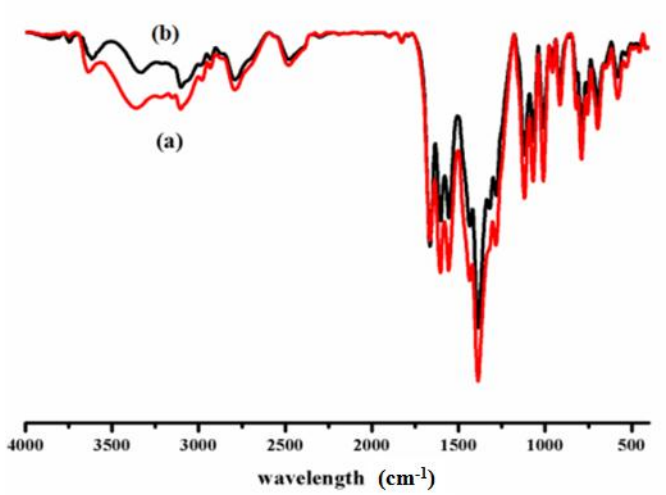

Figure S10 The IR plots of (**3**); (b) the IR plots of activated (**3**).

The characteristic peak of DMF molecules (~1600cm^{-1}) are covered by the peak of crystals, which can not provide evidence for complete activation.