Electronic Supporting Information (ESI) for

Chiral metal-organic framework coated quartz crystal microbalance for chiral discrimination

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Characterization of Zn_2(bdc)(L-lac)(dmf)·DMF

The X-ray diffraction (XRD) pattern of Zn_2(bdc)(L-lac)(dmf)·DMF was recorded with a D/max-2500 diffractometer (Rigaku, Japan) using $Cu_{K\alpha}$ radiation (λ=1.5418 Å). XRD data collected over the angular range from 3 to 80° 2θ with a step 0.02°. Thermogravimetric analysis (TGA) of Zn_2(bdc)(L-lac)(dmf)·DMF was performed on a PTC-10A thermal gravimetric analyzer (Rigaku, Japan) from room temperature to 700 ^oC at a ramp rate of 10 ^oC min^{-1}. The surface area, pore volume, and pore size distributions of Zn_2(bdc)(L-lac)(dmf)·DMF was measured by N_2 adsorption-desorption isotherms on a NOVA 2000e surface area and pore size analyzer (Quantachrome, USA) at 77 K. About 0.1113 g of Zn_2(bdc)(L-lac)(dmf)·DMF was used and was thoroughly out-gassed at 150 ^oC for 12h . The relative pressures used for calculating BET surface area was 0.1-0.3 for Zn_2(bdc)(L-lac)(dmf)·DMF. The prepared Zn_2(bdc)(L-lac)(dmf)·DMF gave a BET surface area of 377.5 m^2 g^{-1} with a pore volume of 0.22 cm^3 g^{-1}. The morphology of Zn_2(bdc)(L-lac)(dmf)·DMF coating was characterized on a QUANTA 200 scanning electron microscope (SEM) (FEI, Hillsboro, Oregon).

Structures of four pairs of enantiomers

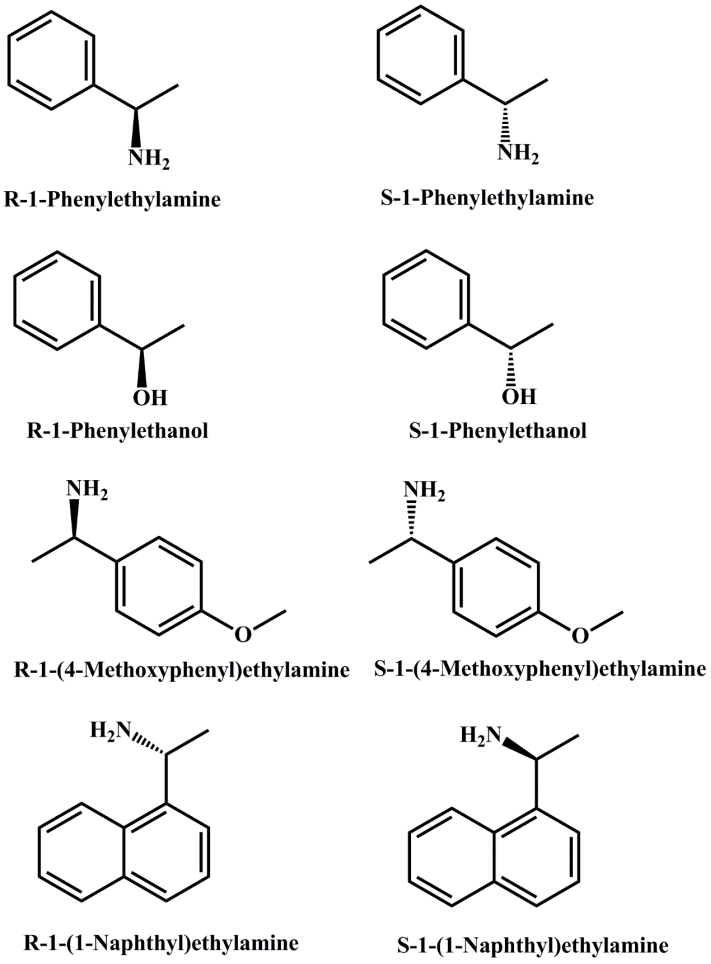

Fig. S1 Structures of four pairs of enantiomers.

Reversibility of the adsorption of enantiomers on Zn_2(bdc)(L-lac)(dmf)·DMF

The changes of the frequency with time were continuously monitored by exposing to the enantiomers and then purging with pure nitrogen gas. The results show that the adsorption-desorption process was reversible for four pairs of enantiomers. Detail information for the adsorption and desorption for S-1-Phenylethylamine is shown Fig. S2.

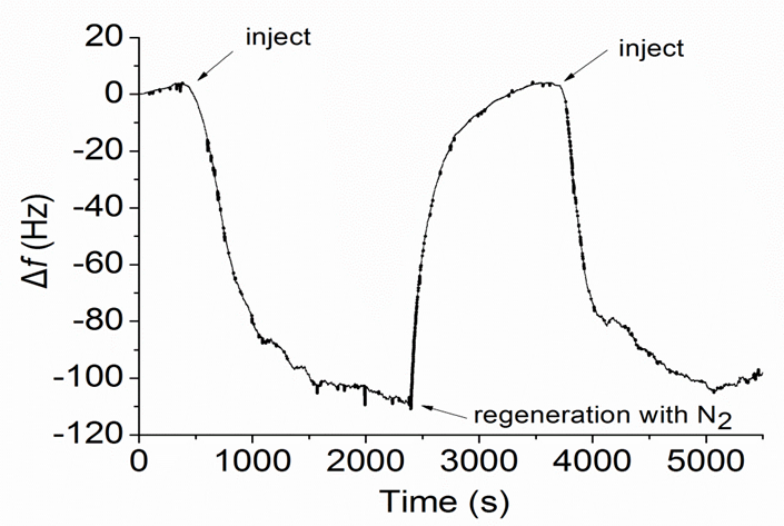

Fig. S2 Adsorption and desorption curve monitored continuously for the adsorption of 0.5 μL *S*-1-Phenylethylamine and desorption with pure nitrogen at 30 °C.

Dimensions of four pairs of enantiomers

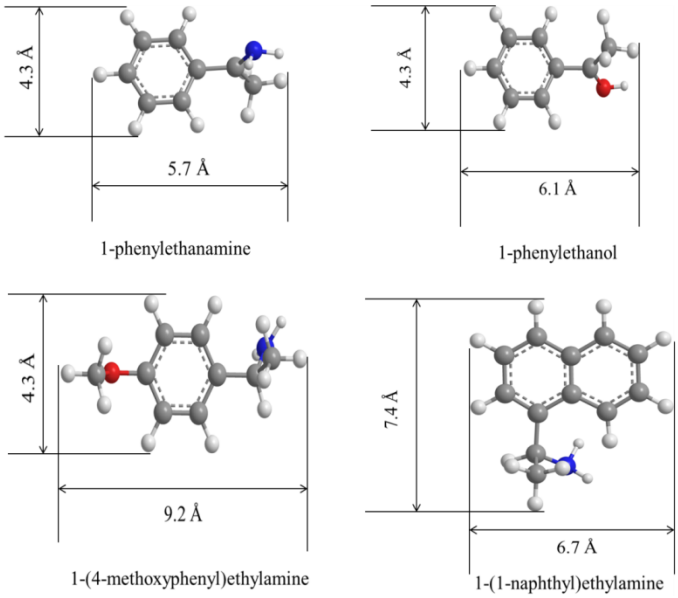

Fig. S3 Dimensions of four pairs of enantiomers calculated with chem-3D. (C gray; O red; N blue; H white.)

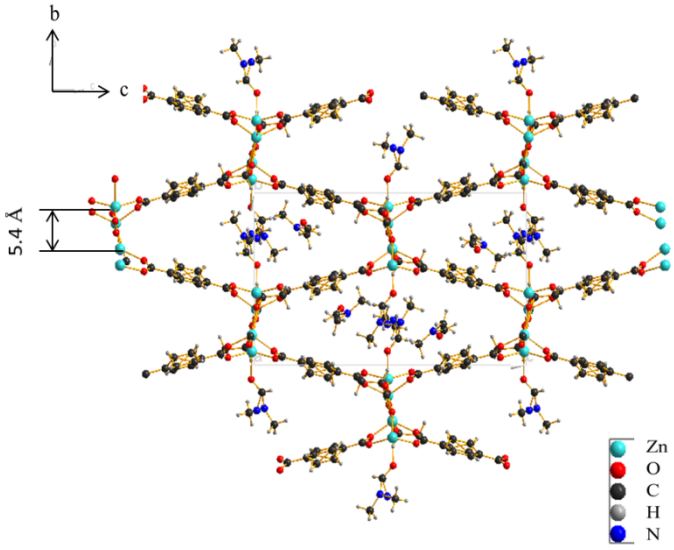

Fig. S4 Cavity size of Zn_2(bdc)(L-lac)(dmf)·DMF calculated by the software named "Diamond".

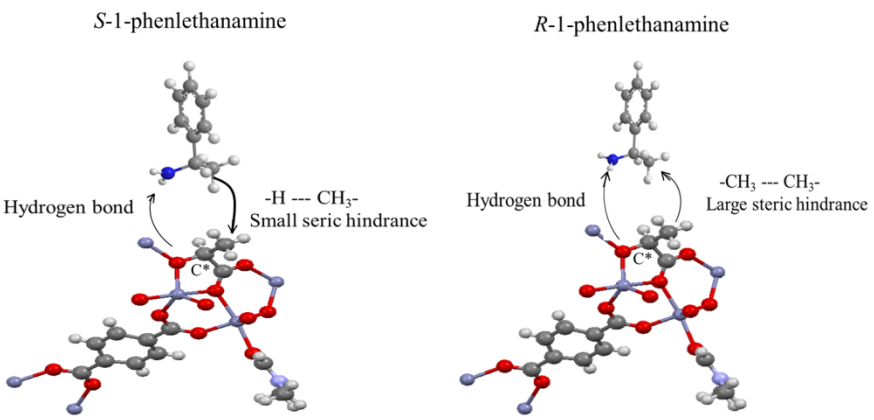

Fig. S5 The steric hindrance when *S* and *R* enantiomer interact with Zn_2(bdc)(L-lac)(dmf)·DMF (The same situation for four pairs of enantiomers) (C gray; O red; N blue; H white; C* chiral carbon.)

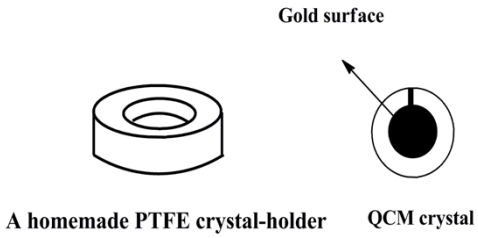

Fig. S6 A homemade PTFE crystal-holder to limit the thin coating of Zn_2(bdc)(L-lac)(dmf)·DMF to the gold surface of the QCM crystal.