## **Supporting Information**

## Gas Sorption, Second-Order Nonlinear Optics and

## Luminescence Properties of A Multifunctional Srs-type MOF Built

## by Tris((4-carboxyl)phenylduryl)amine

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*Figure S1* Coordination environment of  $Zn^{2+}$  centers in **FIR-28**.



Figure S2 A pair of srs networks.



Figure S3 TGA curve of FIR-28.



*Figure S4* PXRD patterns of simulated from the single-crystal data of **FIR-28** (black) and as-synthesized **FIR-28** (red).



*Figure S5* C<sub>3</sub>H<sub>8</sub>, C<sub>2</sub>H<sub>4</sub>, CO<sub>2</sub> and CH<sub>4</sub> sorption isotherms at 298 K. Solid lines through the experimental data are fits to the dual-site Langmuir-Freundlich model.



*Figure S6* The solid-state emission spectrum ( $\lambda_{ex} = 360$  nm) measured at room temperature of H<sub>3</sub>TPA ligand.



*Figure S7* Solid-state emission spectra ( $\lambda_{ex} = 360$  nm) of **FIR-28** dispersed in different solvents.



Figure S8 The IR spectra for FIR-28 and H<sub>3</sub>TPA ligand.