Supplementary Information for

A hydrostable samarium (III)-MOF sensor for the sensitive and selective detection of tryptophan based on "dual antenna effect"

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Table S1. Selected bond lengths (Å) and angles (°) of Sm-MOF.

$[Sm_2(BTEC)_{1.5}(H_2O)_8]\cdot 6H_2O$			
Sm1-O6#1	2.4949(16)	Sm2-O7#3	2.6062(17)
Sm1-O1	2.4504(16)	Sm2-O9	2.3939(16)
Sm1-O1#2	2.6059(16)	Sm2-O16	2.4444(18)
Sm1-O3	2.4178(17)	Sm2-O20	2.4187(19)
O6#1-Sm1-O1#2	153.71(5)	O9- Sm2-O7#3	129.95(6)
O1- Sm1-O6#1	118.12(5)	O9- Sm2-O16	74.29(6)
O1- Sm1-O1#2	66.61(6)	O9- Sm2-O20	69.63(6)
O1- Sm1-O5#1	82.56(6)	O9- Sm2-O8#3	145.32(6)
O1- Sm1-O13	67.64(6)	O9- Sm2-O4	74.65(6)
O1- Sm1-O2#2	107.97(6)	O9- Sm2-O17	133.01(6)
O3- Sm1-O6#1	74.26(6)	O9- Sm2-O19	114.63(6)
O3- Sm1-O1	68.21(6)	O9- Sm2-O18	68.15(6)
O3- Sm1-O1#2	85.16(5)	O16- Sm2-O7#3	68.51(6)
O3- Sm1-O5#1	93.39(6)	O16- Sm2-O8#3	76.64(6)
O3- Sm1-O13	135.60(6)	O16- Sm2-O4	71.82(7)
O3- Sm1-O2#2	127.83(6)	O16- Sm2-O17	135.57(7)
O3- Sm1-O14	141.50(7)	O16- Sm2-O18	141.58(7)
O5#1- Sm1-O6#1	52.27(5)	O20- Sm2-O7#3	75.69(6)
O5#1- Sm1-O1#2	147.38(5)	O20- Sm2-O16	86.41(8)
O5#1- Sm1-O2#2	138.68(6)	O20- Sm2-O4	142.07(6)
O13- Sm1-O6#1	124.36(6)	O20- Sm2-O17	76.58(7)
O13- Sm1-O1#2	81.84(6)	O20- Sm2-O19	137.46(7)
O13- Sm1-O5#1	76.55(6)	O20- Sm2-O18	73.47(7)
O13- Sm1-O2#2	71.56(7)	O8#3- Sm2-O7#3	51.23(5)
O15- Sm1-O6#1	79.05(7)	O8#3- Sm2-O17	81.48(6)
O15- Sm1-O1#2	79.08(7)	O8#3- Sm2-O18	141.39(6)
O15- Sm1-O1	128.45(7)	O4- Sm2-O7#3	121.08(5)
O15- Sm1-O3	71.76(6)	O4- Sm2-O8#3	78.65(6)

O15- Sm1-O5#1	131.31(7)	O4- Sm2-O17	140.06(6)

Symmetry Codes: #1 = 1-x, 1-y, -z; #2 = 1-x, -y, 1-z; #3 = 1+x, +y, +z; #4 = -1+x, +y, +z; #5 = 1-x, 1-y, 2-z

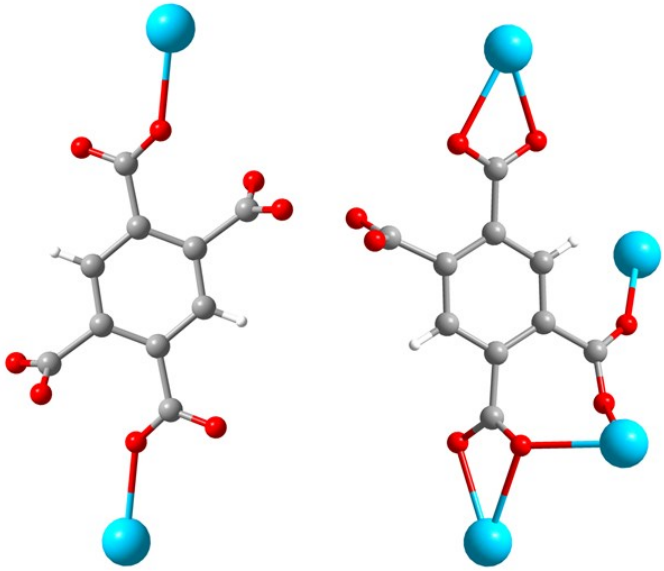

Fig. S1. Coordination mode for the H_4BTEC ligand in Sm-MOF.

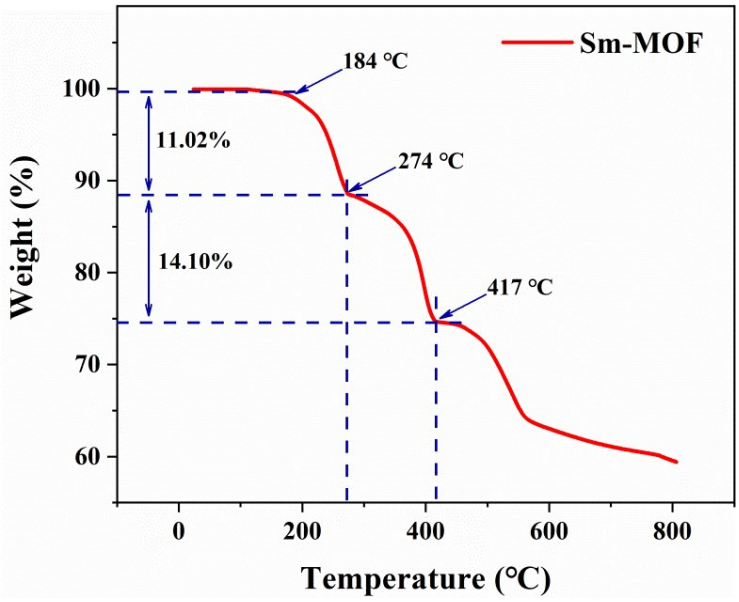

Fig. S2. The thermal gravimetric (TGA) curve of Sm-MOF.

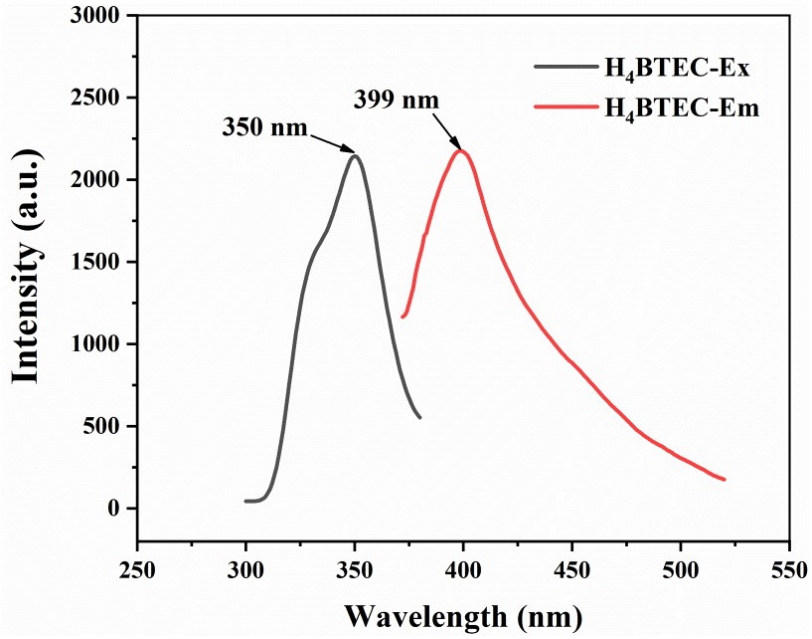

Fig. S3. The excitation and emission spectra of H_4BTEC in the solid state.

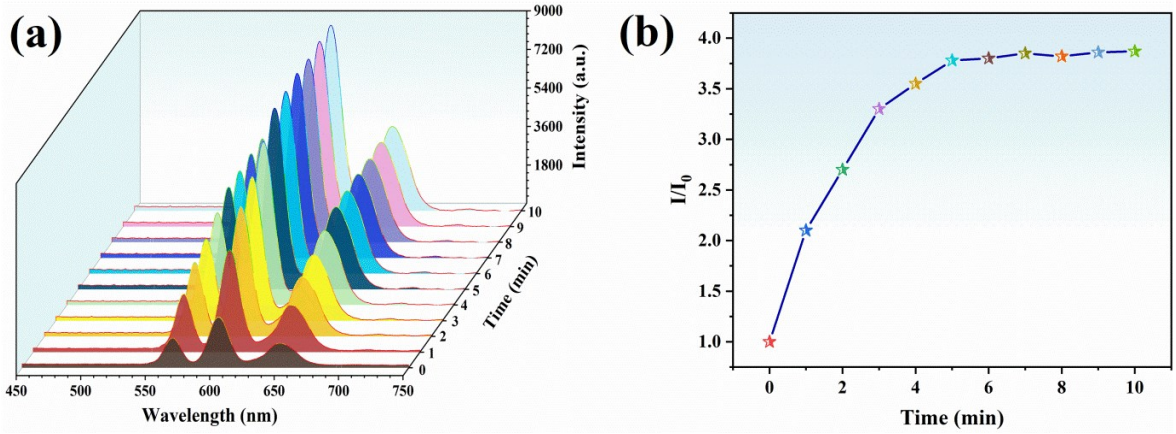

Fig. S4. (a) The emission spectra of Sm-MOF in 0-10 minutes after addition Trp;
(b) The time-dependent fluorescence intensity curve of Sm-MOF suspension after adding Trp with a concentration of 80 μM.

Table S2. Literature contrasts of the fluorescent sensors for sensing of Trp.

Sensors	Methods	Solvents	LOD	Reference
BTAP5	Turn-off	H_2O/DMSO	283 nM	35
3-APBA-HTCs	Turn-off	PBS	5 μM	36
$[Co(PS)_4](ClO_4)_2$	Turn-on	PBS	410 nM	37
ZJU-108	Turn-on	Water	43.4 nM	38

Cu-CDs	Ratiometric	Water	275 nM	39
Sm-MOF	Turn-on	Water	330 nM	**This work**

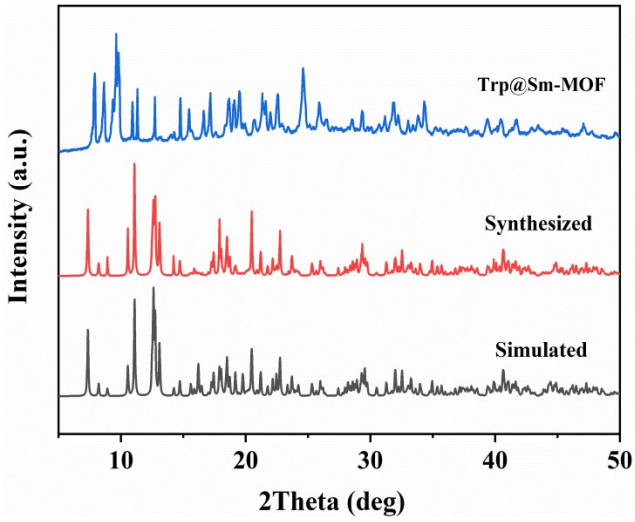

Fig. S5. PXRD spectrum of Trp interacting with Sm-MOF.

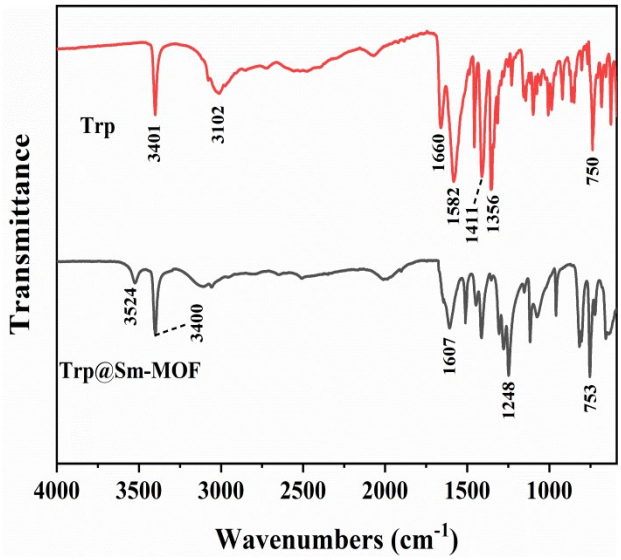

Fig. S6. (b) FT-IR spectra of Sm-MOF and Trp@Sm-MOF.