

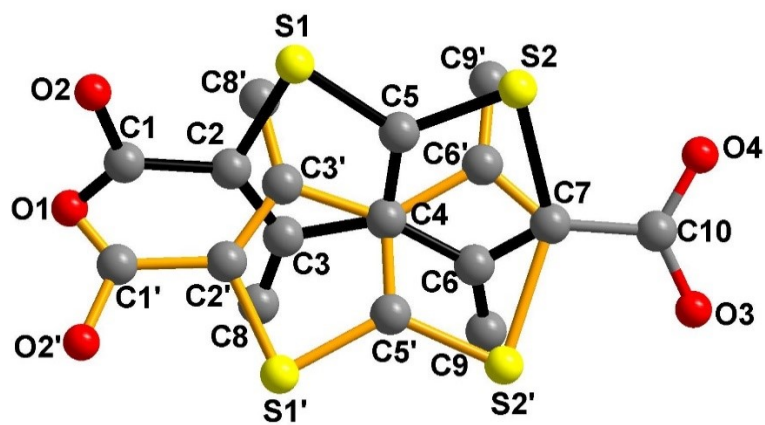
*Supporting Information for*

**Two flexible zinc-triazole-dicarboxylate frameworks: breathing behaviors  
for CO<sub>2</sub> uptake and dye adsorption properties**

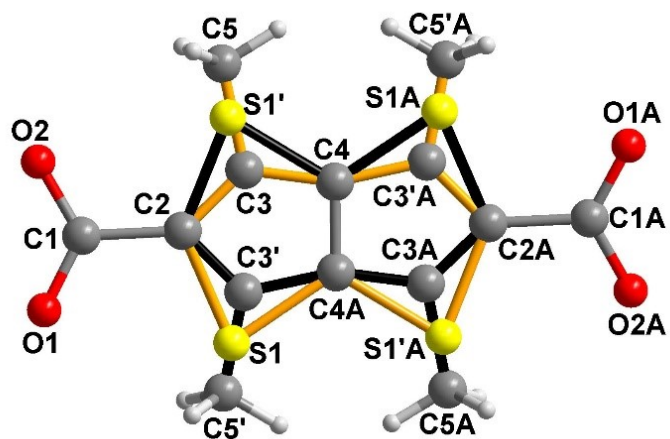
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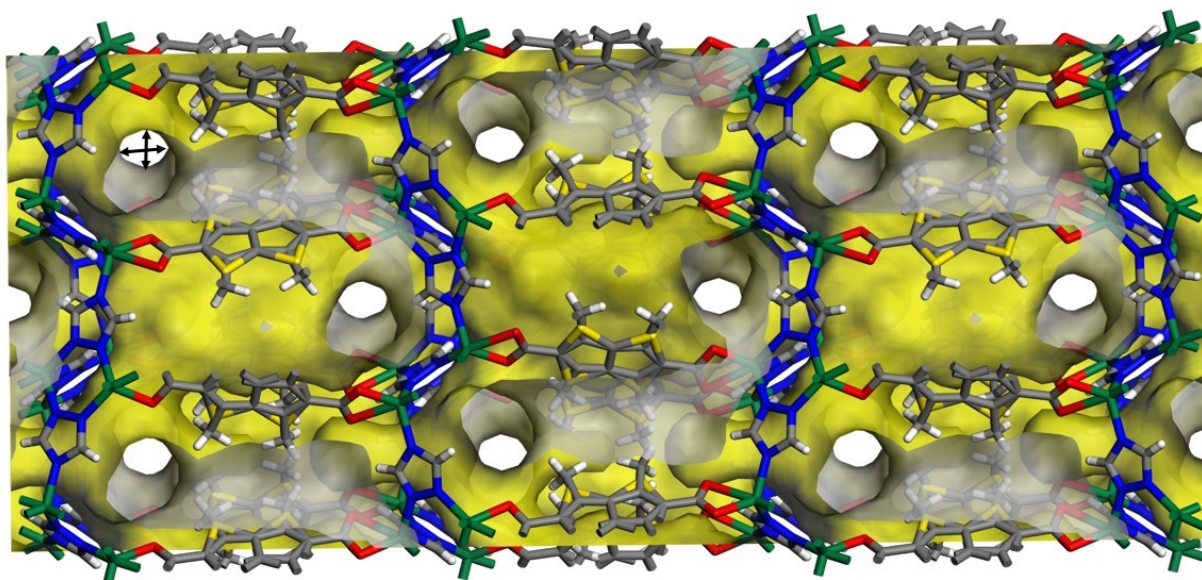
E-mail: zaxchem@126.com (Ai-Xin Zhu) and huangbo@ynnu.edu.cn (Bo Huang).



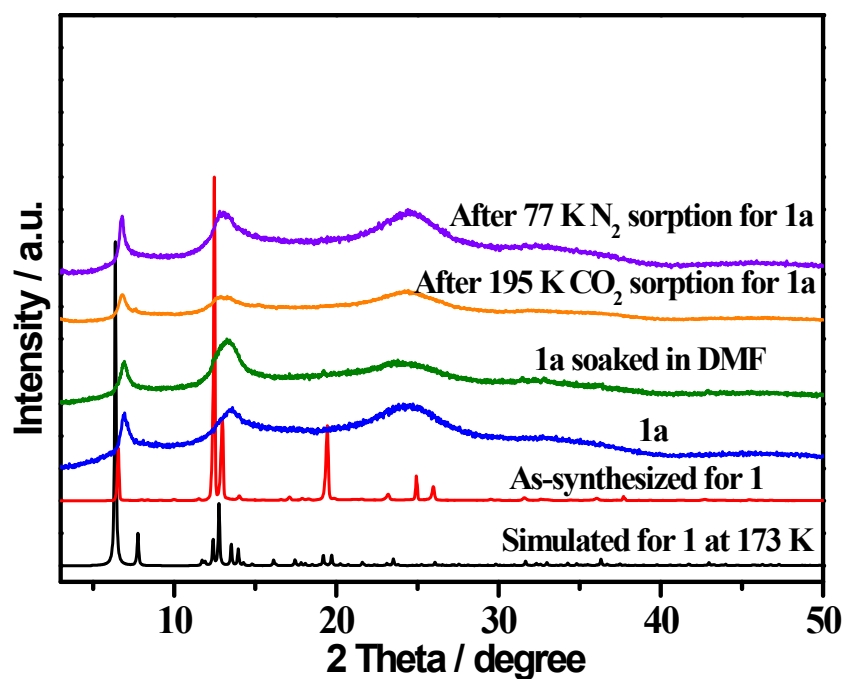
**Fig. S1** The two-fold disorder of the ligand DMTDC in 1.



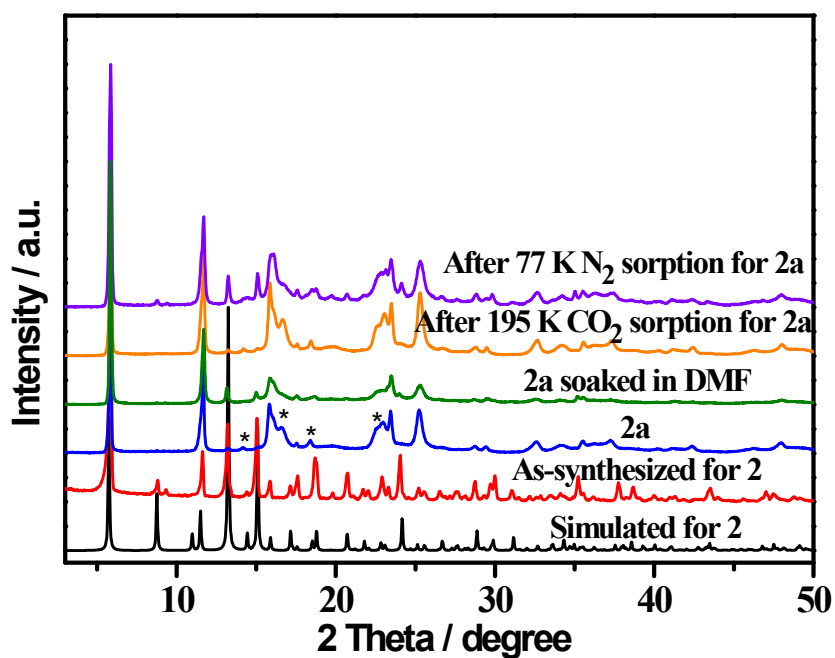
**Fig. S2** The two-fold disorder of the ligand DMTDC in 2.



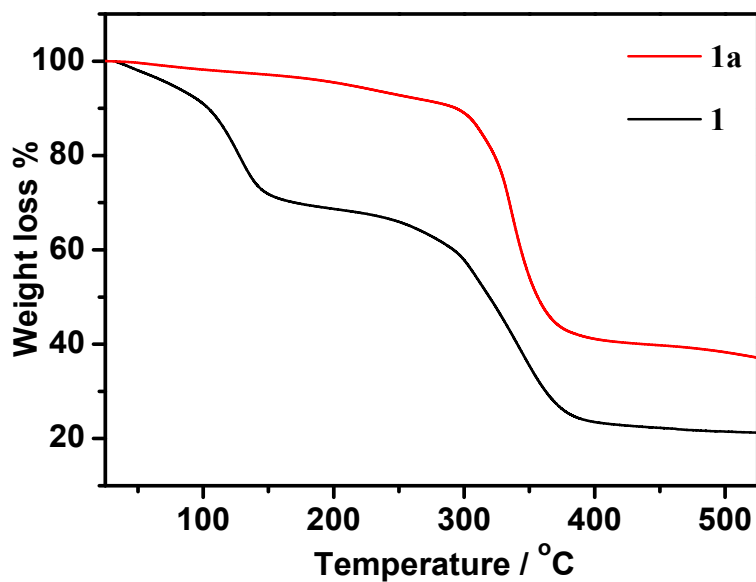
**Fig. S3** Illustrations of the position of pore diameters (approximately  $1.6 \times 2.1 \text{ \AA}^2$ , the direction is indicated by the arrows) viewed along the  $a$ -axis or the  $b$ -axis for compound **2** (the pore shapes viewed along the  $a$ -axis and the  $b$ -axis are same because its single-crystal crystallized in tetragonal space group).



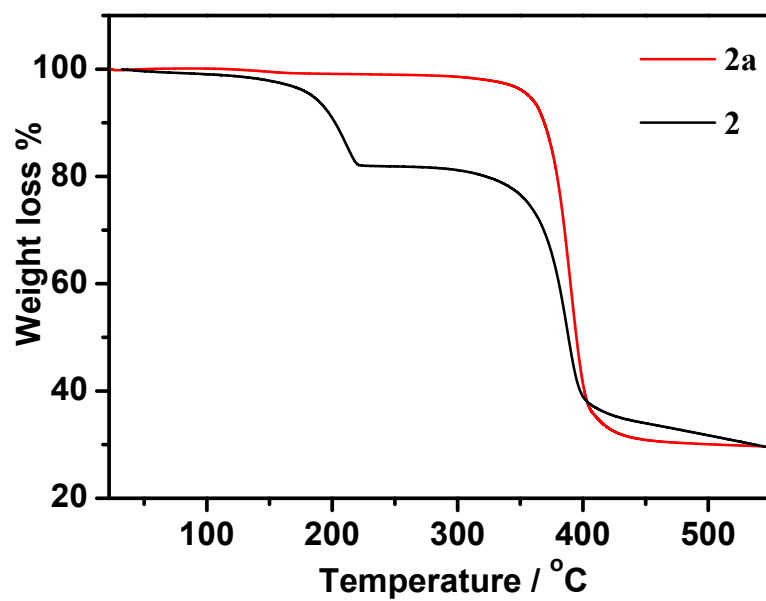
**Fig. S4** PXRD patterns of **1** under different conditions.



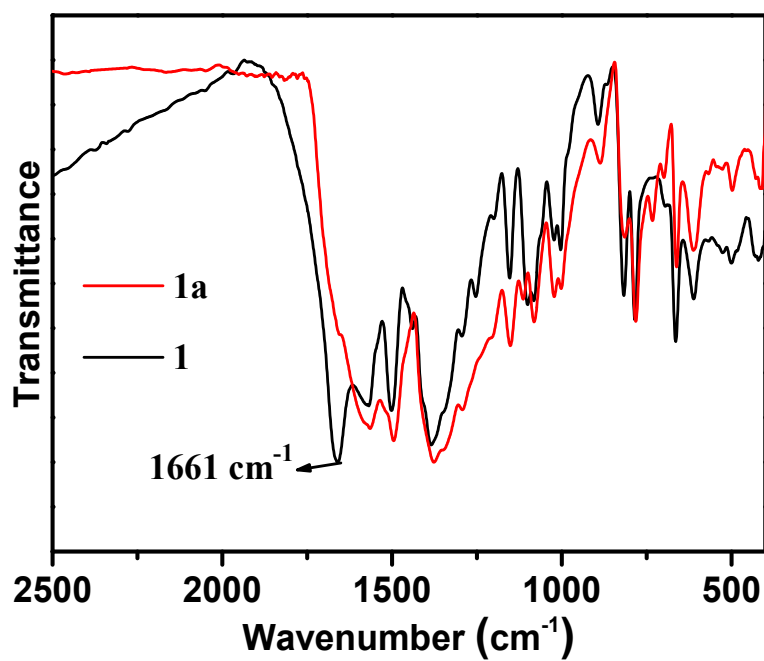
**Fig. S5** PXRD patterns of **2** under different conditions (compared to **2**, the different peak positions of PXRD for compound **2a** were marked with stars).



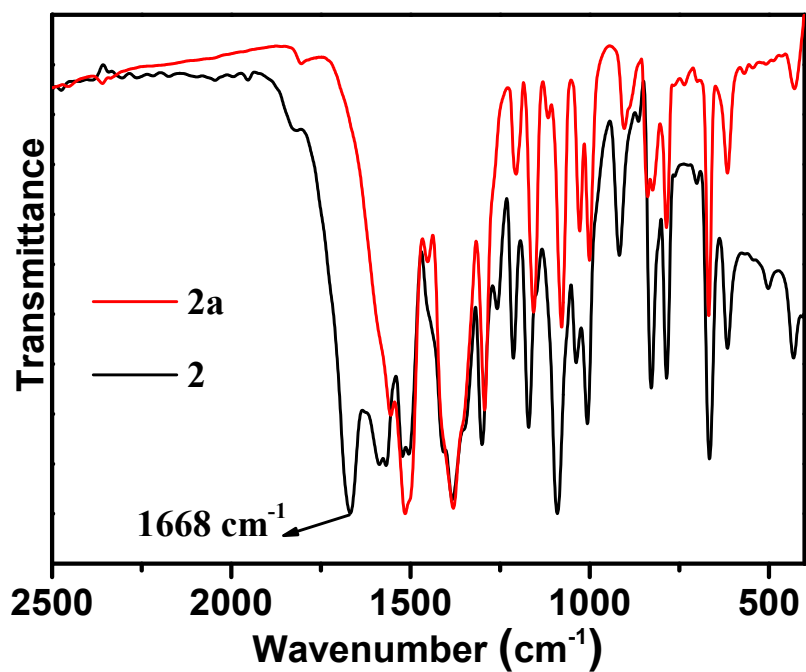
**Fig. S6** TG curves of **1** and **1a** in  $N_2$  environment.



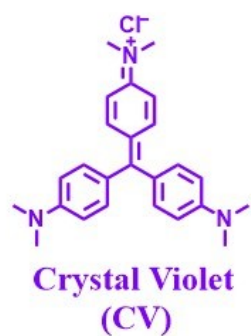
**Fig. S7** TG curves of **2** and **2a** in N<sub>2</sub> environment.



**Fig. S8** FT-IR spectra of **1** and **1a**. The lack of C=O stretching peaks at about 1661 cm<sup>-1</sup> in the IR spectra of **1a** confirms the full release of DMF guests.



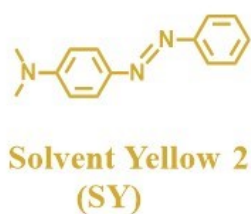
**Fig. S9** FT-IR spectra of **2** and **2a**. The lack of C=O stretching peaks at about  $1668\text{ cm}^{-1}$  in the IR spectra of **2a** confirms the full release of DMF guests.



$4.00 \times 7.93 \times 16.34\text{ \AA}$



$4.00 \times 12.97 \times 13.74\text{ \AA}$



$5.31 \times 7.25 \times 16.02\text{ \AA}$



$5.31 \times 7.25 \times 17.39\text{ \AA}$

**Scheme S1** Chemical structures of four organic dyes with different charge and size.

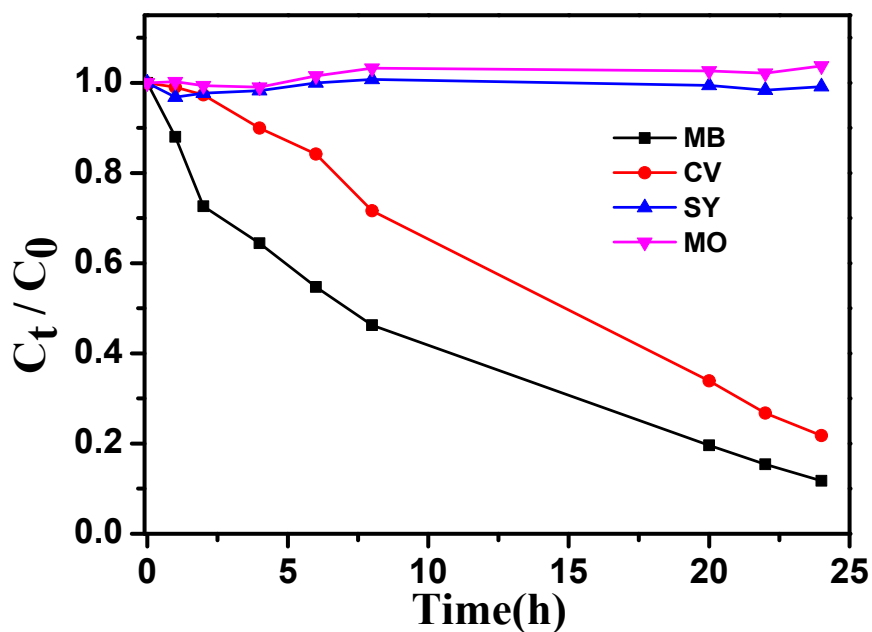


Fig. S10 different dye adsorption rates by using compound 1 as the adsorbent.

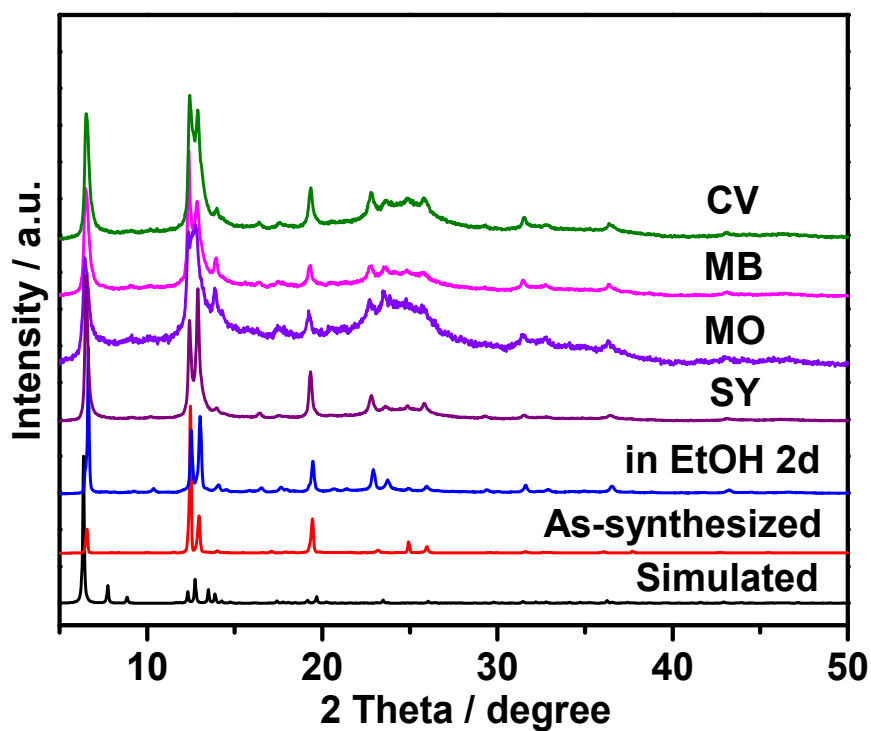


Fig. S11 PXRD patterns of 1 after being soaking in EtOH solution of various organic dye for 24 h.

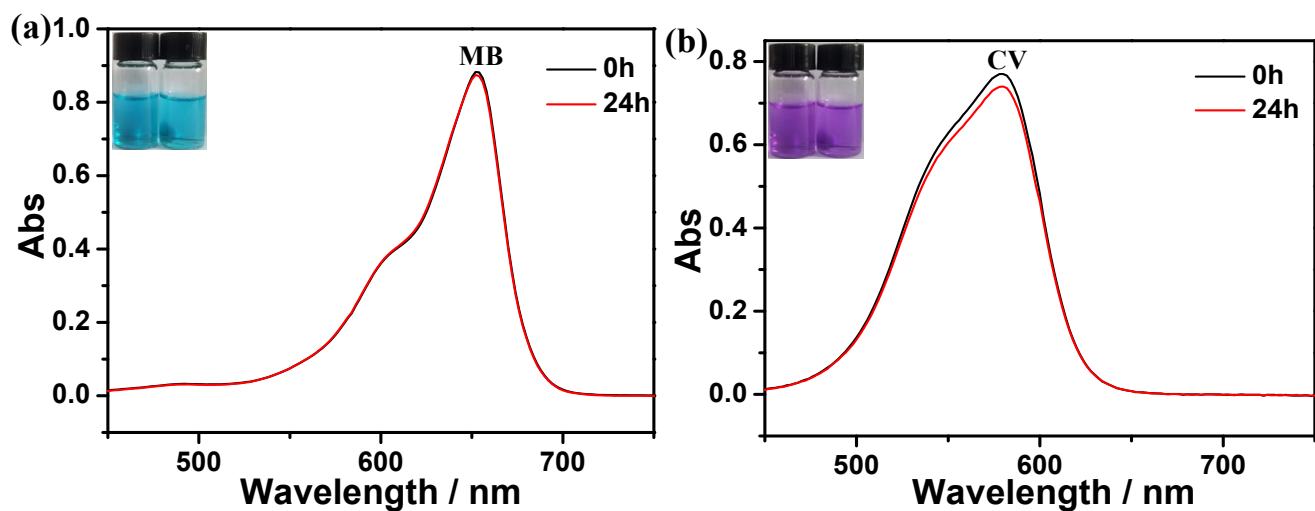


Fig. S12 Blank control experiment of (a) MB and (b) CV without crystals.

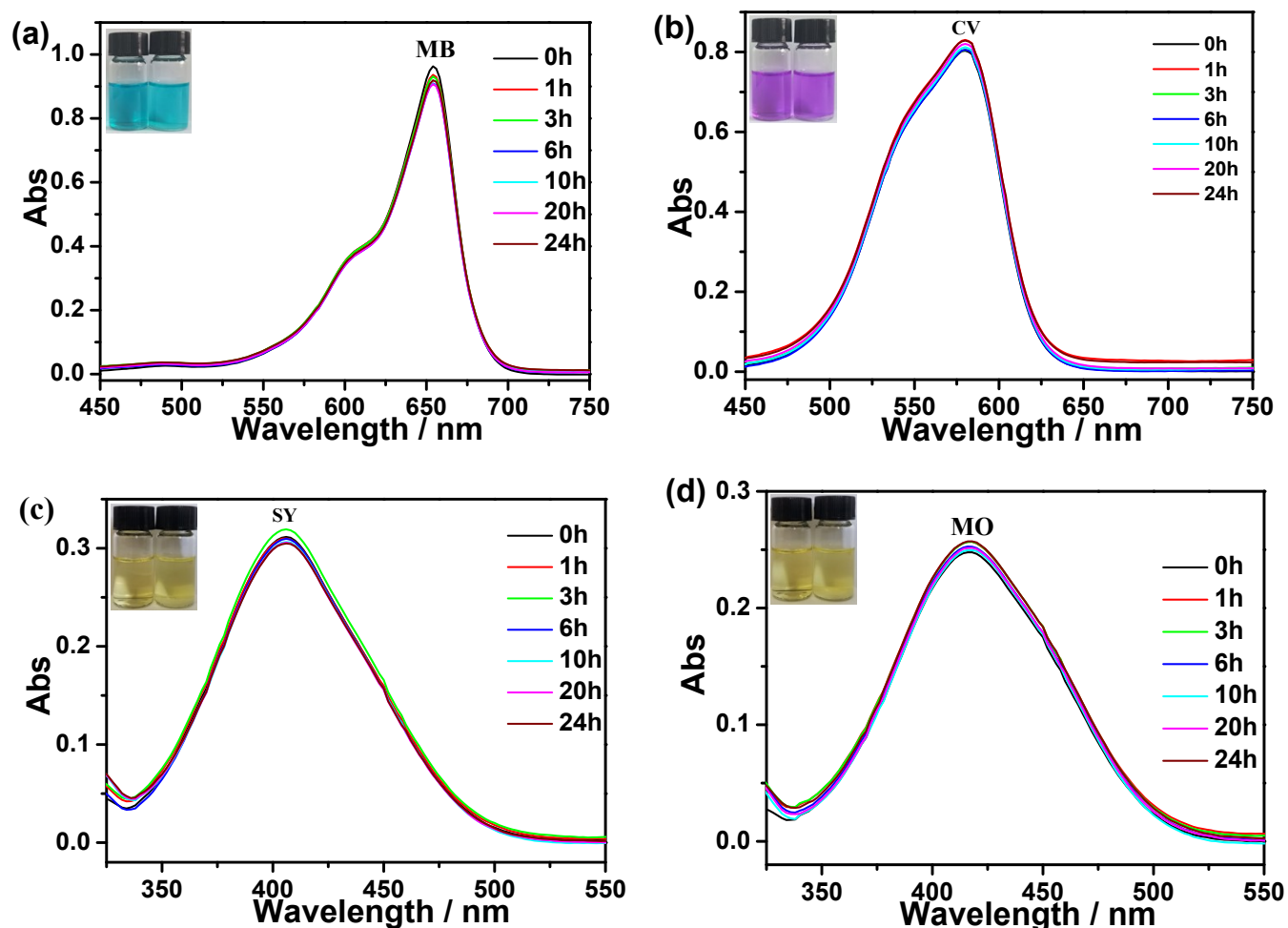


Fig. S13 UV/vis spectra of EtOH solutions of (a) crystal violet (MB), (b) methylene blue (CV), (c) Methyl Orange (SY) and (d) solvent yellow 2 (MO) in the presence of **2** at different time intervals.