

SUPPORTING INFORMATION

Reversing the Dyes Adsorption and Separation Performance of Metal-Organic Frameworks via Introduction of –SO₃H Groups

Xudong Zhao,[†] Keke Wang,[‡] Zhuqing Gao,^{*,†} Huihui Gao,[†] Zhixia Xie,[†]
Xiaoyu Du[†] and Hongliang Huang^{*,‡}

[†]College of Chemical and Biological Engineering, Taiyuan University of Science and Technology, Taiyuan 030012, China

[‡]State Key Laboratory of Organic-Inorganic Composites, Beijing Advanced Innovation Center for Soft Matter Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, China

Contents

- S1. FTIR spectra of the MOFs
- S2. N₂ adsorption-desorption isothermals of the MOFs
- S3. Molecular structures of the dyes
- S4. The effect of light on the adsorption
- S5. Stability investigation of the MOFs
- S6. Zeta potentials of the MOFs
- S7. The effect of co-existed non-polar molecules on the adsorption
- S8. Regeneration of the dyes-loaded MOFs

S1. FTIR spectra of the MOFs

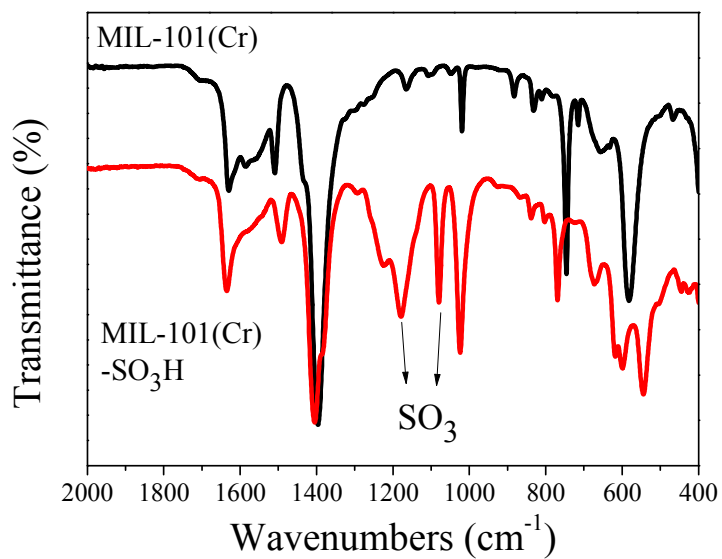


Figure S1. FTIR spectra of MIL-101(Cr) and MIL-101(Cr)-SO₃H.

S2. N₂ adsorption-desorption isothermals of the MOFs

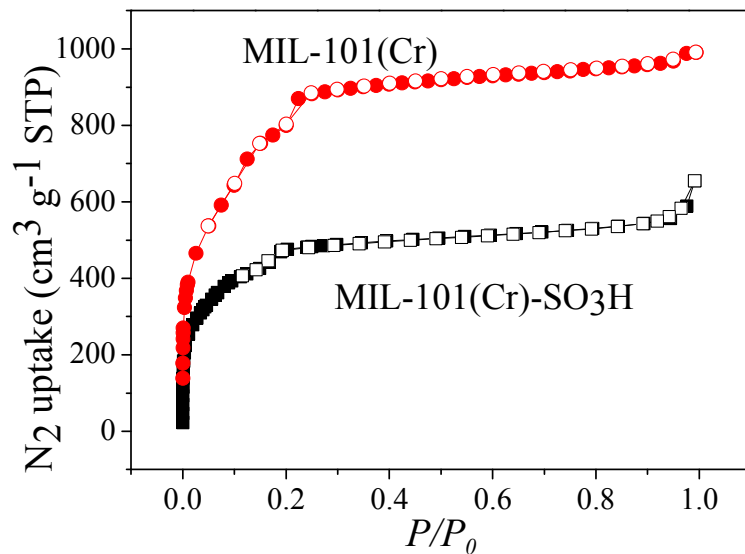


Figure S2. N₂ adsorption-desorption isotherms of MIL-101(Cr) and MIL-101(Cr)-SO₃H at 77 K.

S3. Molecular structure of the dyes

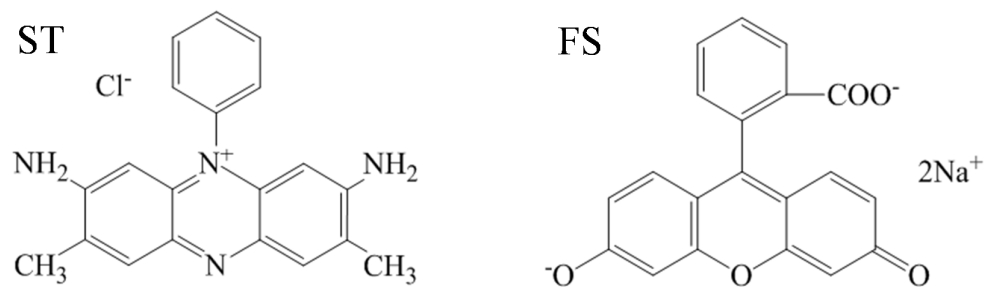


Figure S3. Molecular structures of ST and FS.

S4. The effect of light on the adsorption

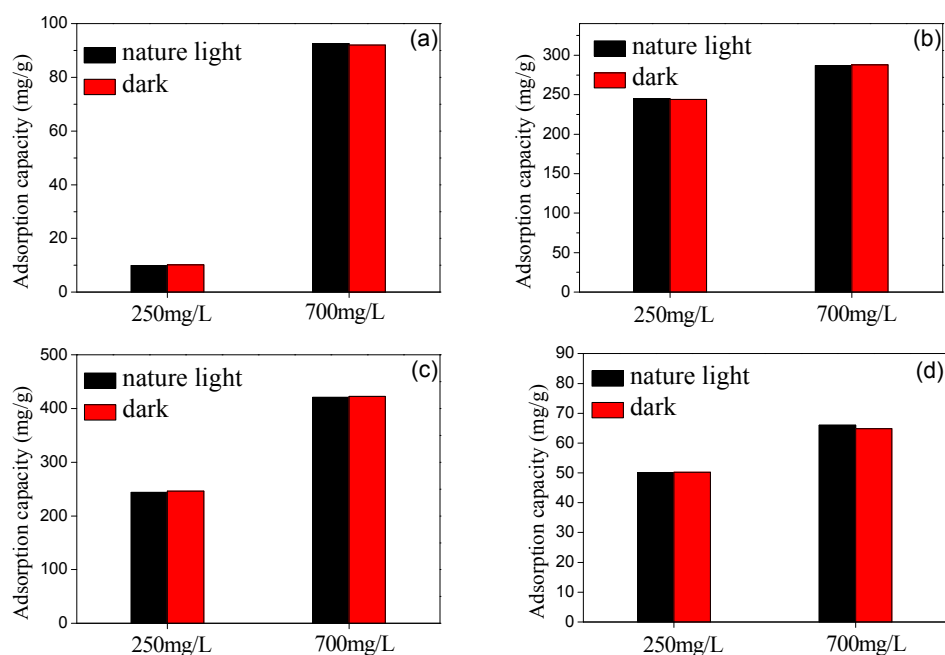


Figure S4. The adsorption capacities of the MOFs under nature light irradiation and dark environment: ST adsorption in MIL-101(Cr) (a); FS adsorption MIL-101(Cr) (b); ST adsorption in MIL-101(Cr)-SO₃H (c); FS adsorption in MIL-101(Cr)-SO₃H (d).

S5. Stability investigation of the MOFs

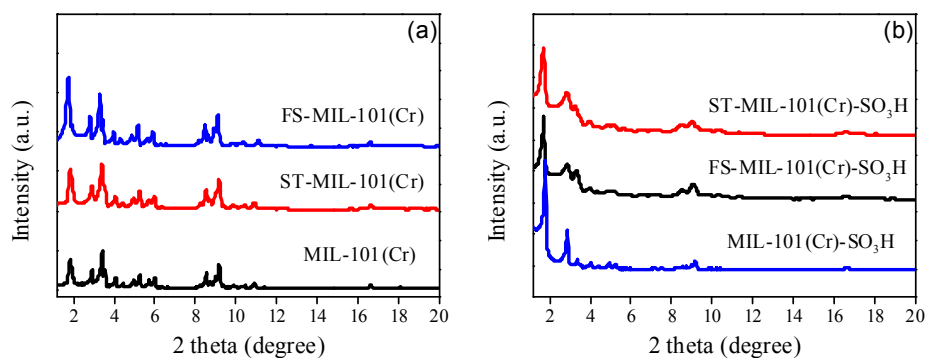


Figure S5. PXRD patterns of MIL-101(Cr) (a) and MIL-101(Cr)-SO₃H (b) before and after immersed in the dyes solutions.

S6. Zeta potentials of the MOFs

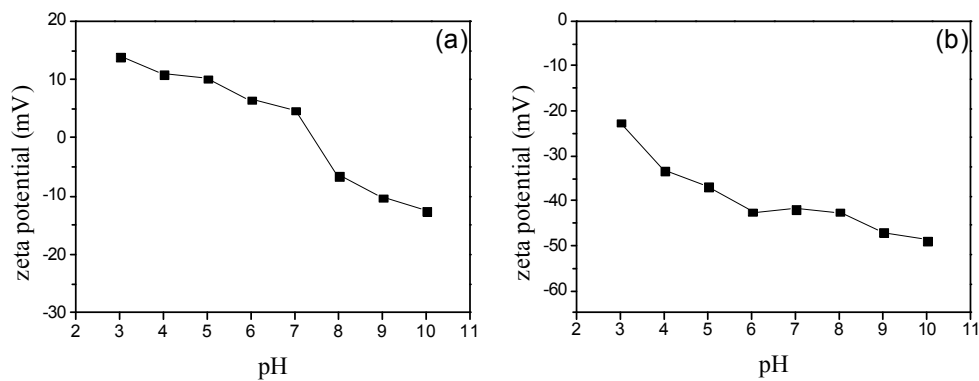


Figure S6. Zeta potentials of MIL-101(Cr) (a) and MIL-101(Cr)-SO₃H (b) in aqueous solutions with different pH values.

S7. The effect of co-existed non-polar molecules on the adsorption

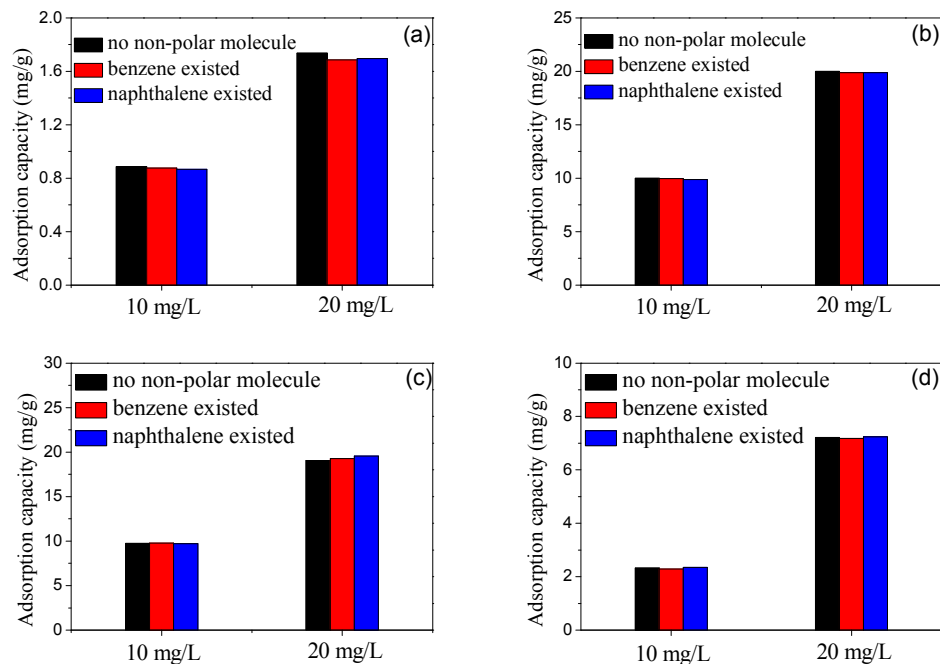


Figure S7. The effect of co-existed non-polar molecules on the adsorption: ST adsorption in MIL-101(Cr) (a); FS adsorption MIL-101(Cr) (b); ST adsorption in MIL-101(Cr)-SO₃H (c); FS adsorption in MIL-101(Cr)-SO₃H (d).

S8. Regeneration investigation of the dyes-loaded MOFs

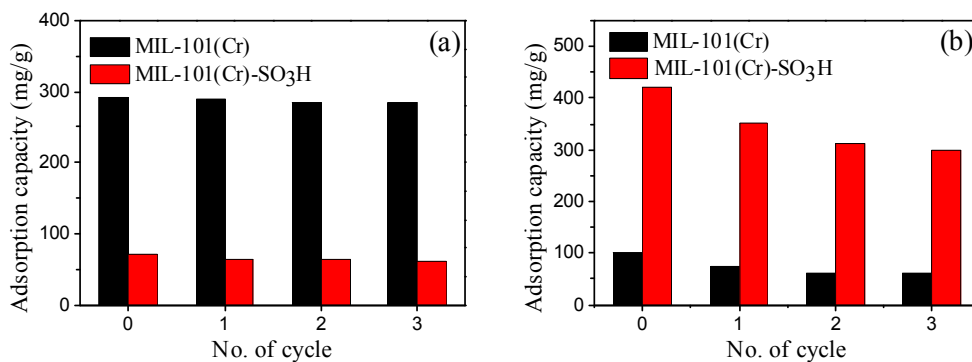


Figure S8. Reusability of MIL-101(Cr) and MIL-101(Cr)-SO₃H for the adsorption of FS (a) and ST (b).