Supporting Information

Highly Efficient Degradation of Reactive Black KN-B Dye by Ultraviolet Light Responsive ZIF-8 Photocatalysts with Different Morphologies

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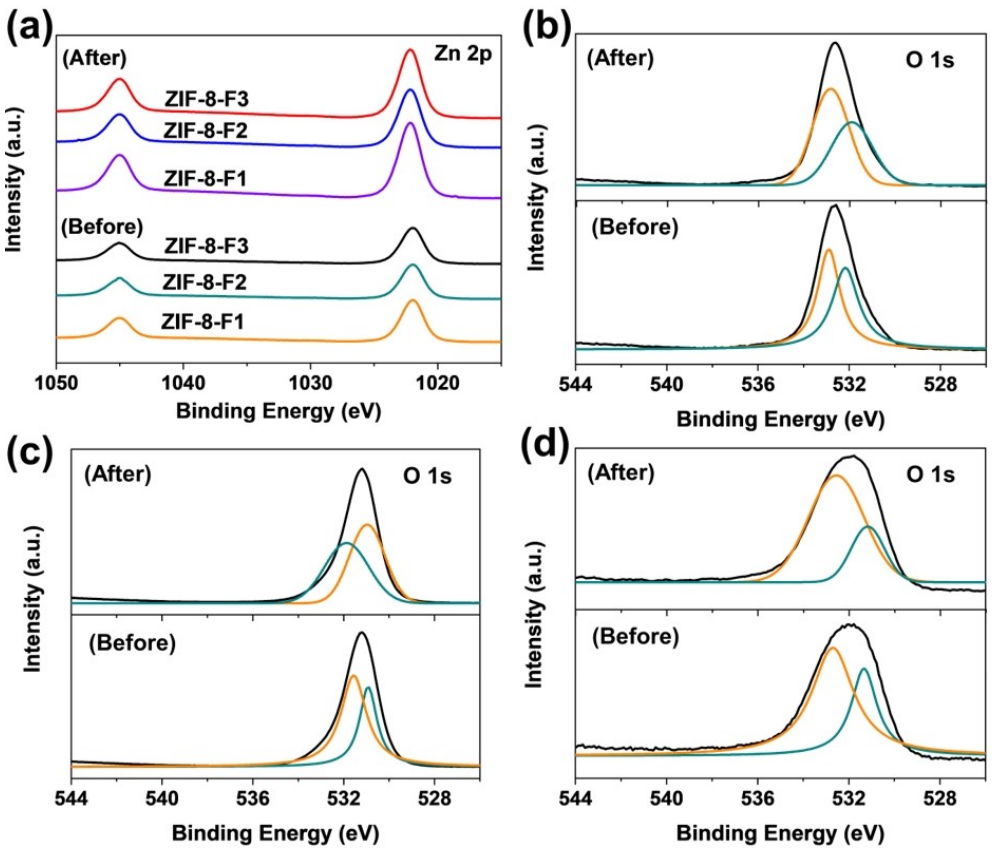

Figure S1. The Zn_{2p} spectra of three ZIF-8 materials (a) and O_{1s} XPS spectra of dodecahedral ZIF-8-F1 (b), pitaya-like ZIF-8-F2 (c), leaf-like ZIF-8-F3 (d) before and after three cycles of RB5 photodegradation.

The XPS spectra of three ZIF-8 materials before and after three cycles of RB5 photodegradation can be well fitted by Gaussian–Lorentz functions. The binding energies of three ZIFs for Zn_{2p} observed at approximately 1022.2 and 1045.0 eV are related to $Zn_{2p3/2}$ and $Zn_{2p1/2}$, respectively.[1] After photodegrading with RB5 dye, the peaks for Zn_{2p} shifted insignificantly, implying no chemical bonding with RB5.

The O_{1s} spectra of three initial ZIF-8 samples detected at approximately 531.1 and 532.2 eV are attributed to the hydroxyl groups (OH) that interacted with unsaturated zinc and physically absorbed water molecules (H_2O), respectively.[2]

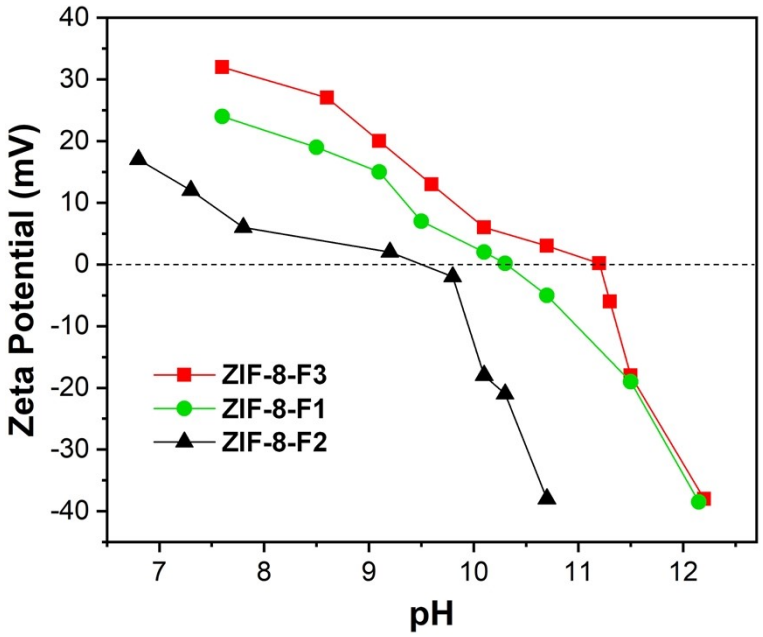

Figure S2. Zeta potential measurements for the three ZIF-8 materials: 3D rhombic dodecahedron (ZIF-8-F1), pitaya (ZIF-8-F2), and 2D leaf (ZIF-8-F3) at different pH values.

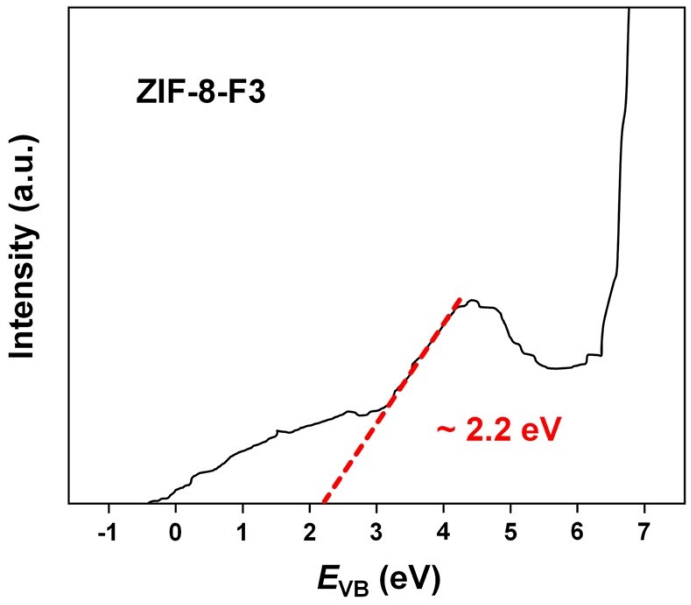

Figure S3. XPS valence band (VB) spectrum of 2D leaf-like ZIF-8-F3 materials.

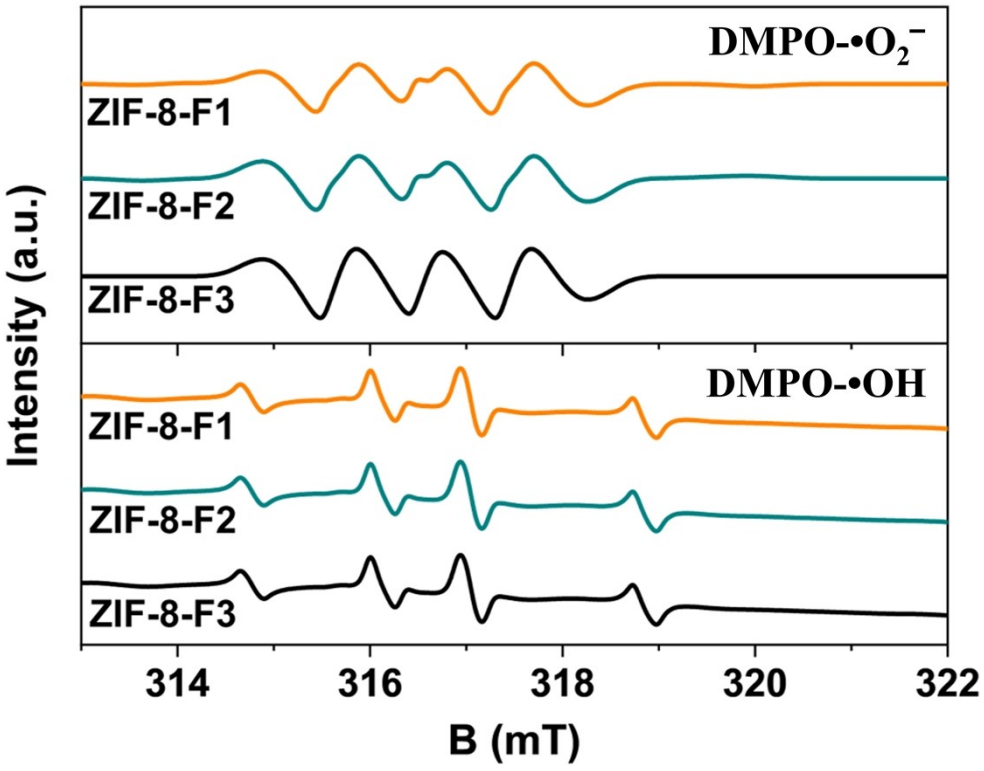

Figure S4. Spin-trapping Electron paramagnetic resonance (EPR) spectra of the DMPO-•O_2^-, and DMPO-•OH radicals of three as-prepared ZIF-8 materials under UV light irradiation.

REFERENCES

(1) Pan, Y.; Liu, W.; Zhao, Y.; Wang, C.; Lai, Z. Improved ZIF-8 Membrane: Effect of Activation Procedure and Determination of Diffusivities of Light Hydrocarbons. *J. Memb. Sci.* **2015**, *493*, 88–96. https://doi.org/https://doi.org/10.1016/j.memsci.2015.06.019.

(2) Muñoz-Gil, D.; Figueiredo, F. M. L. High Surface Proton Conduction in Nanostructured ZIF-8. *Nanomaterials*. **2019**. https://doi.org/10.3390/nano9101369.