Supporting Information

Copper-based Two-Dimensional Metal-Organic Framework Nanosheets as Horseradish Peroxidase Mimics for Glucose Fluorescence Sensing

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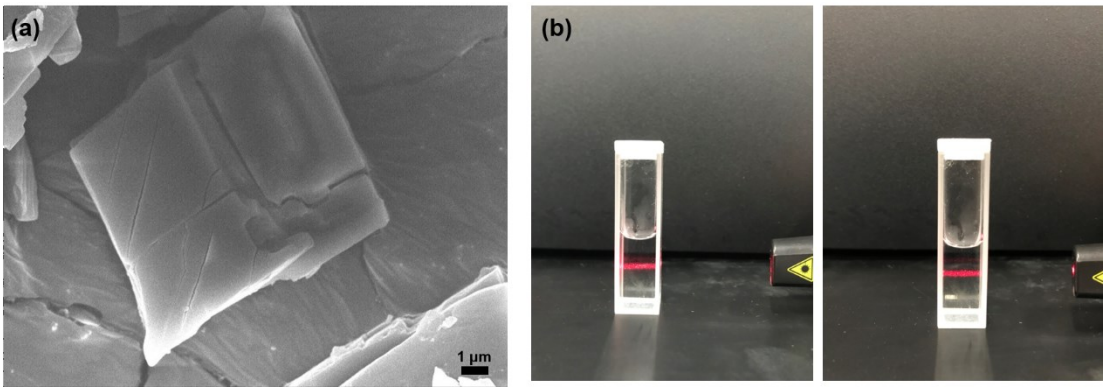

Fig. S1. (a) The SEM image of bulk Cu-MOF. (b) The Tyndall scattering of 2-D Cu-MOF nanosheets in water after 1 min (left) and 18 h (right).

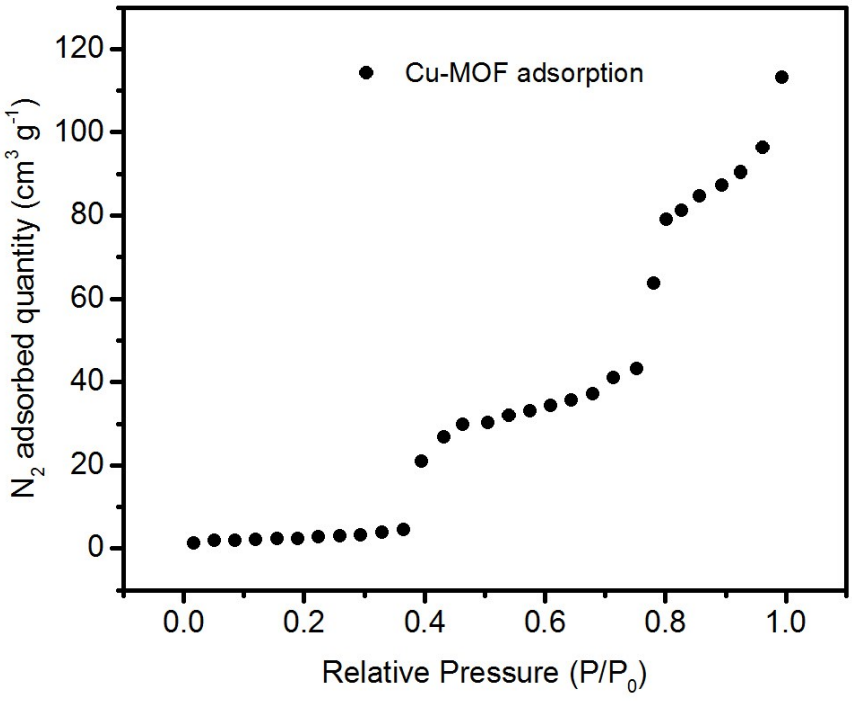

Fig. S2. The adsorption curve of bulk Cu-MOF. The stepwise adsorption indicates framework flexibility during the adsorption, which is in accordance with the previous report (J. Am. Chem. Soc. 2011, 133, 10512).

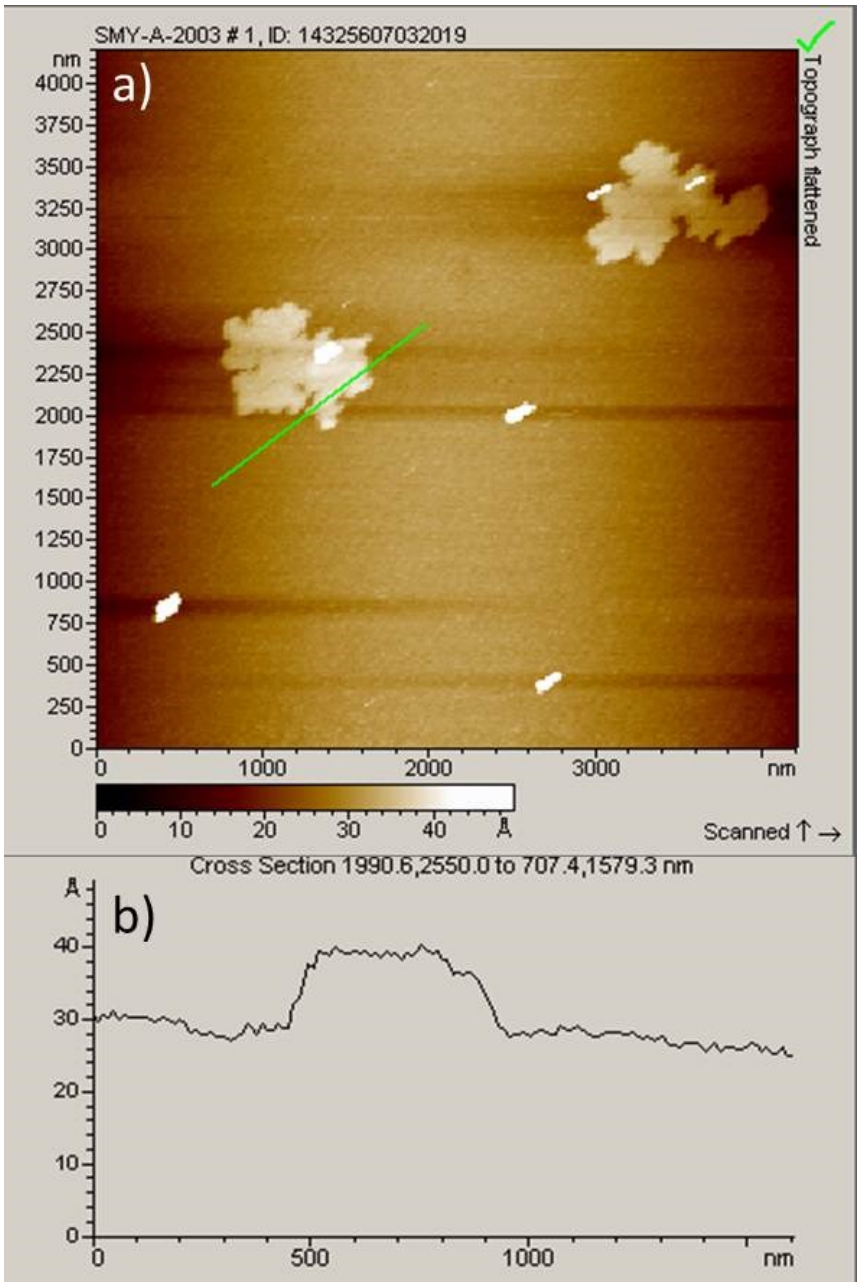

Fig. S3. (a) AFM image and (b) cross-section of 2-D Cu-MOF nanosheets (green line guides the height measurement). The thickness of nanosheets is 1.0 nm.

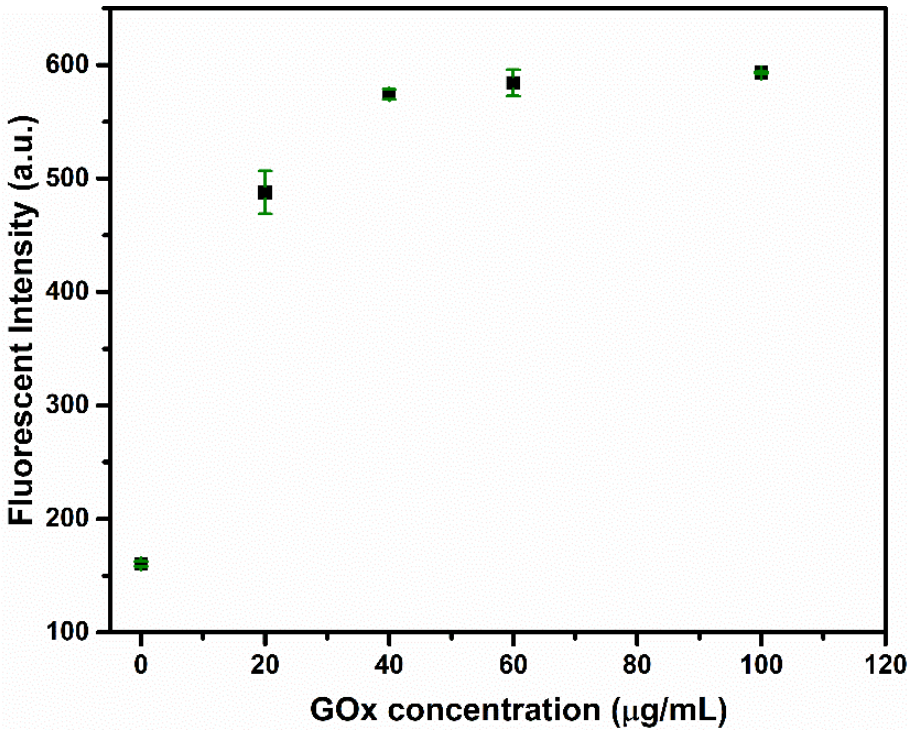

Fig. S4. The effect of GOx concentration on fluorescence intensity. The 10 μL of different concentrations of GOx and 10 μL of 1 mM glucose solutions were added to 130 μL of 1 M HEPES buffer (pH=7.0), then incubated at 37 ºC for 30 min. The 50 μL of 10 mM TH, 50 μL of 0.02 $mg \cdot mL^{-1}$ Cu-MOF and 750 μL of 0.1 M Na_2CO_3-$NaHCO_3$ buffer were added into the above 150 μL solution.

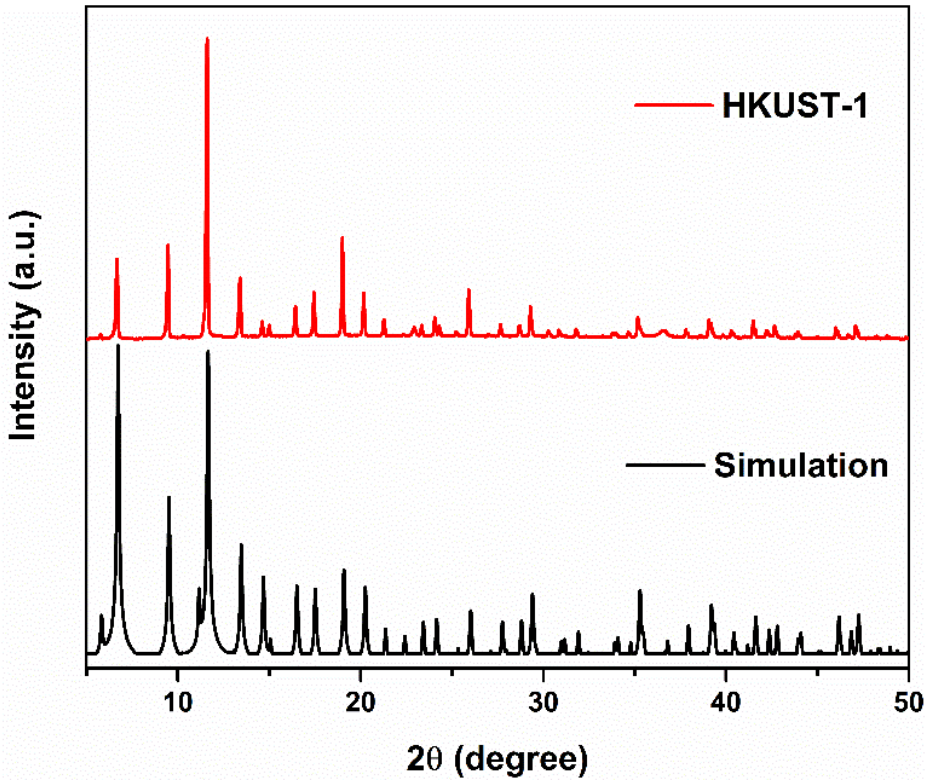

Fig. S5. The HKUST-1 XRD patterns of the simulation one (black) and as-synthesized one (red).

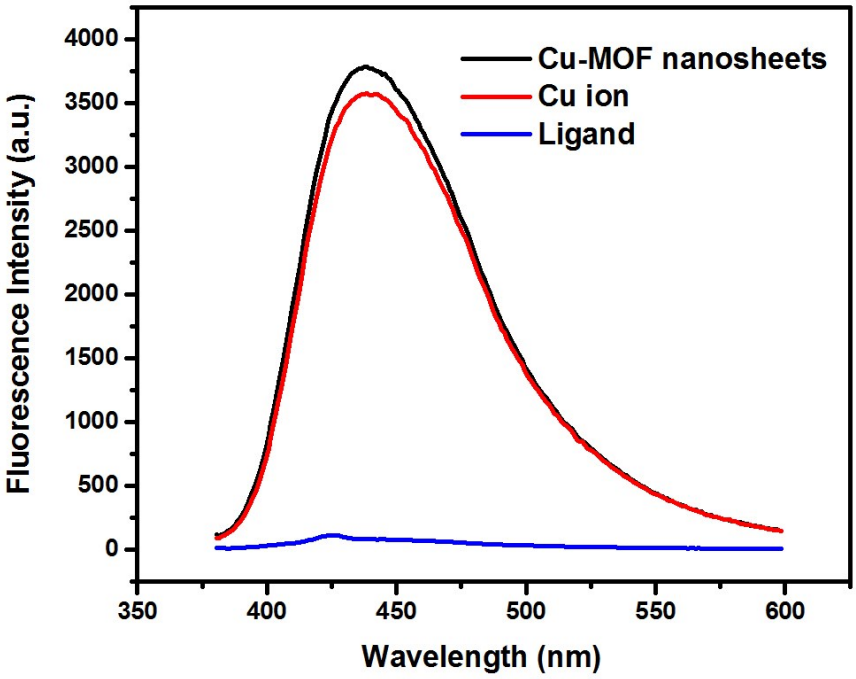

Fig. S6. The comparison of biomimetic catalyst 2D Cu-MOF nanosheets with ligand bpy and Cu ions. 50 μL of 10 mM TH, 50 μL of 0.02 mg·mL^{-1} Cu-MOF (or molar equivalents) and 10μL 1M H_2O_2 were added to Na_2CO_3-$NaHCO_3$ buffer (0.1 M) to reach a final volume of 1.0 mL.

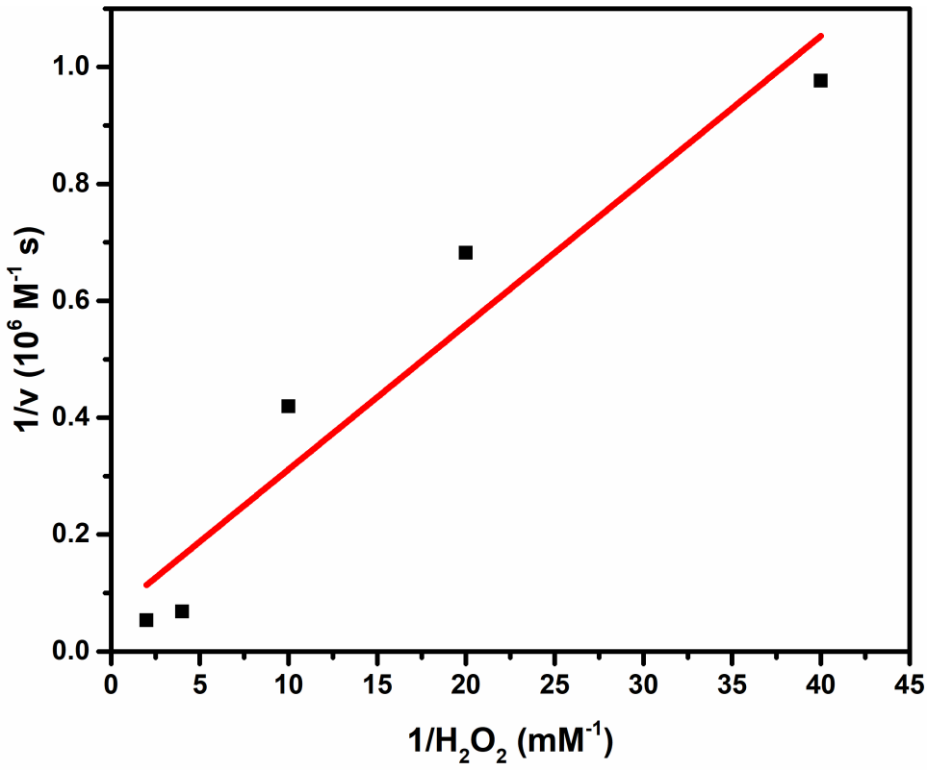

Fig. S7. Steady-state kinetic assays of the 2-D Cu-MOF nanosheets. The concentrations of H_2O_2 were 25, 50, 100, 250 and 500 μM, respectively.

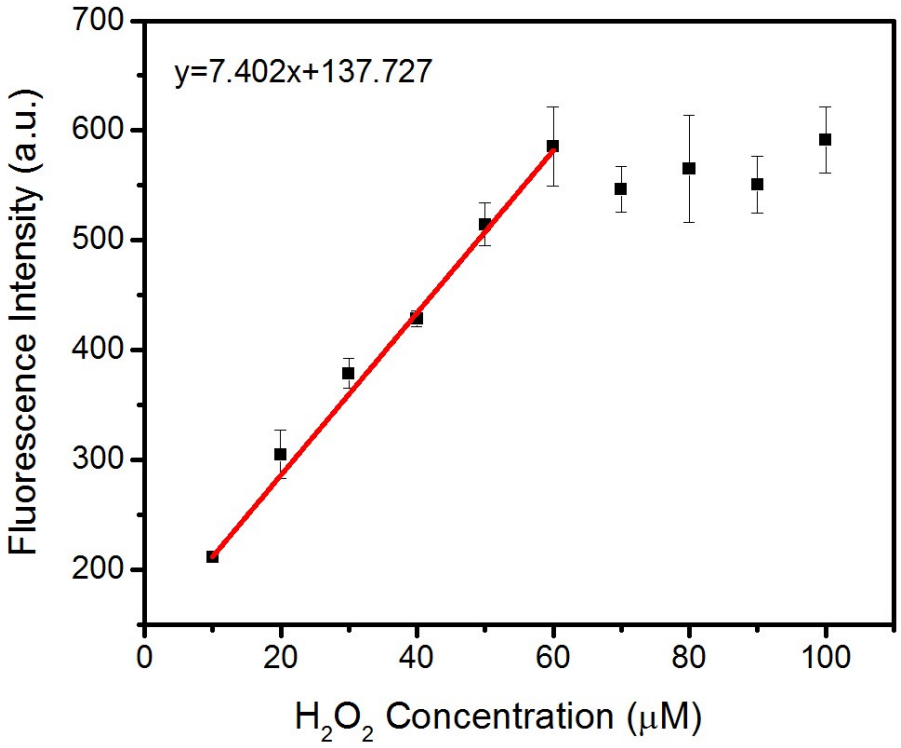

Fig. S8. The calibration curve for H_2O_2 with HRP as catalyst. 50 μL of 10 mM TH, 50 μL of 0.02 mg·mL^{-1} HRP and H_2O_2 with different concentrations were added to Na_2CO_3-$NaHCO_3$ buffer (0.1 M, pH=10.0) to reach a final volume of 1.0 mL. The reaction conditions were same as 2-D MOF nanosheets. Error bars represent the standard deviation for three measurements. The detection limit was calculated as 1.0 μM. The linear range was 10-60 μM.

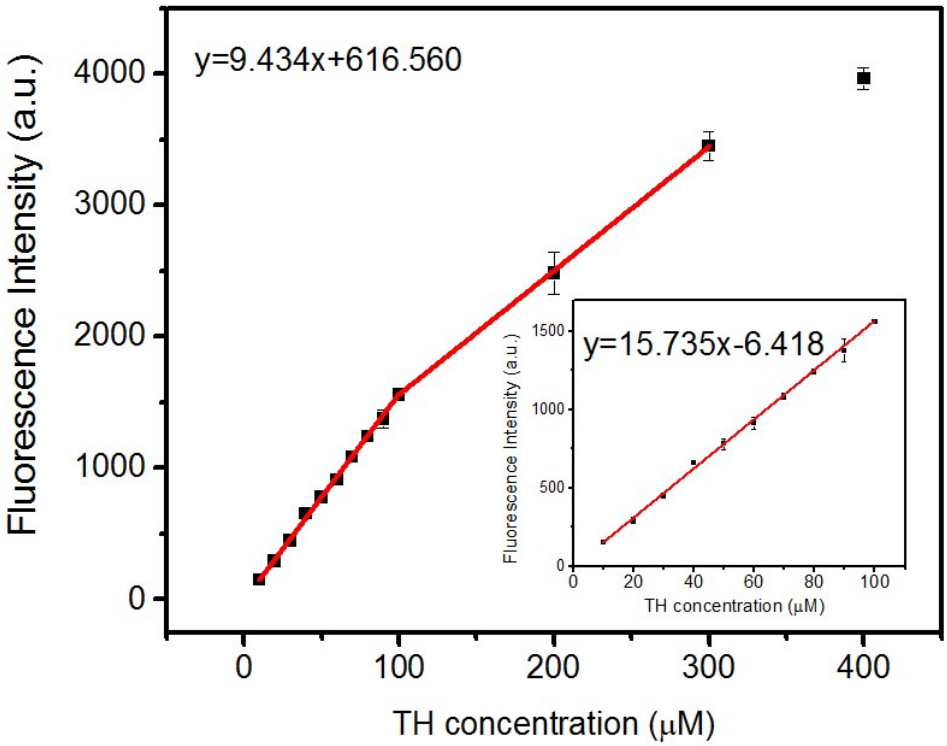

Fig. S9. The calibration curve for TH. Cu-MOF (50 μL of 0.02 mg·mL^{-1}), H_2O_2 (10 mM) and TH with different concentrations were added to Na_2CO_3-$NaHCO_3$ buffer (0.1 M, pH=10.0) to reach a final volume of 1.0 mL. Error bars represent the standard deviation for three measurements.