

Application of a metal cobalt based on 4,6-bis(imidazol-1-yl)isophthalic acid metal-organic framework materials in photocatalytic CO₂ reduction, antibacterial and dye adsorption

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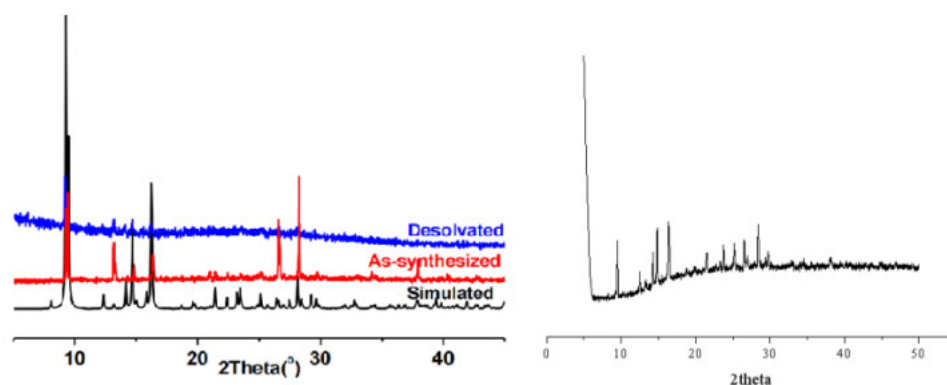


Figure S1. XRD patterns of the MOF (the left is the MOF XRD in the literature; the right is the MOF XRD synthesized in this paper)

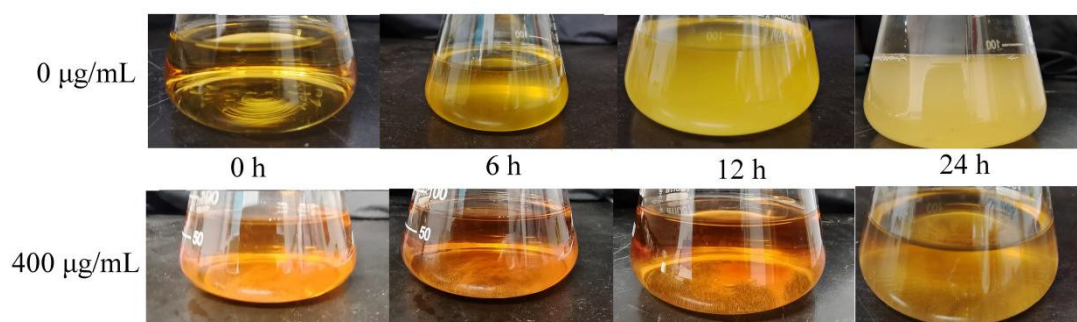


Figure S2. Changes of MOF solution with different concentration on S.aureus in 24 h.

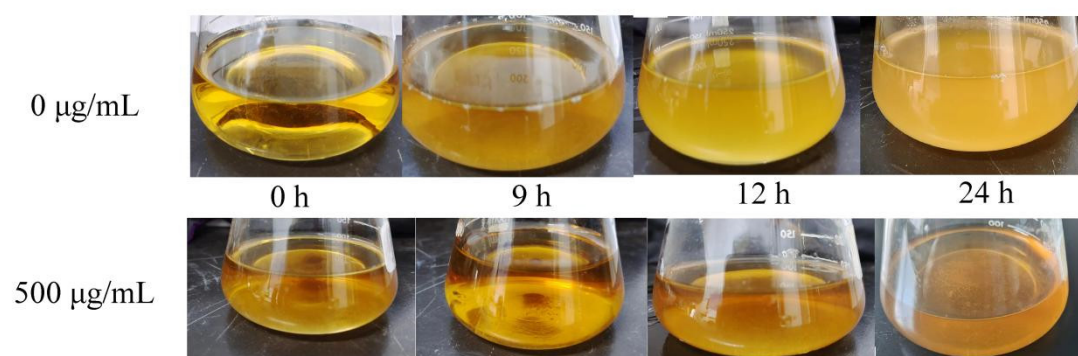


Figure S3. Changes of MOF solution with different concentration on *C. albicans* in 24 h.

Table S1. Comparison of production rate of photocatalytic CO₂ reduction products under similar conditions

Catalytic agent	Main products	Productivity	Productivity /($\mu\text{mol/g}$)	TON	Ref.
ZIF-67@a-TiO ₂	CO	43.8 μmol	43800	9.73	Multi-functional amorphous TiO ₂ layer on ZIF-67 for enhanced CO ₂ photoreduction performances under visible light. Journal of CO ₂ Utilization. 2019 , 34, 411-421.
ZIF-67_3	CO	3.89 $\mu\text{mol}\cdot\text{mg}^{-1}\cdot\text{h}^{-1}$	15560	3.5	Metal-organic framework (ZIF-67) as efficient cocatalyst for photocatalytic reduction of CO ₂ : the role of morphology effect. J. Mater. Chem. A, 2018 , 6, 4768-4775.
Ag@Co-ZIF-9	CO	28.4 μmol	28400	-	Photo-reduction of carbon dioxide by ultra-small Ag nanoparticles doped Co-ZIF-9 under visible light. Nanotechnology. 2018 , 29, 284003.
MOF-525-Co	CO	200.6 $\mu\text{mol}\cdot\text{g}^{-1}\cdot\text{h}^{-1}$	1203.6	-	Efficient Visible-Light-Driven Carbon Dioxide Reduction by a Single-Atom Implanted Metal–Organic Framework. Angew. Chem. Int. Ed. 2021 , 762, 144101.
TPVT-MOFs@g-C ₃ N ₄	CO	56.4 $\mu\text{mol}\cdot\text{g}^{-1}\cdot\text{h}^{-1}$	112.8	-	Metal–organic framework (MOF) composite materials for photocatalytic CO ₂ reduction under visible light. Dalton Trans. 2021 , 50, 3186-3192.
Ni ₃ (HITP) ₂	CO	3.45 $\times 10^4$ $\mu\text{mol}\cdot\text{g}^{-1}\cdot\text{h}^{-1}$	103500	-	Selective reduction of CO ₂ by conductive MOF nanosheets as an efficient co-catalyst under visible light illumination. Applied Catalysis B: Environmental. 2018 , 238, 339-345.
g-C ₃ N ₄ -MOLs	CO	464.1 $\mu\text{mol}\cdot\text{g}^{-1}\cdot\text{h}^{-1}$	4641	-	Metal-organic layers as a platform for developing single-atom catalysts for photochemical CO ₂ reduction. Nano Energy. 2021 , 80, 105542.
[(μ -bdt)Fe ₂ (CO) ₆]	CO	-	-	710	Selective photocatalytic reduction of CO ₂ to CO mediated by a [FeFe]-hydrogenase model with a 1,2-phenylene S-to-S bridge. Chinese Journal of Catalysis. 2021 , 42, 310-319.

CAT	CO	-	-	140	Selective and Efficient Photocatalytic CO ₂ Reduction to CO Using Visible Light and an Iron-Based Homogeneous Catalyst. J. Am. Chem. Soc. 2014 , 136, 16768–16771.
MOF	CO	410.59 μmol	41059.03	68.66	This work