

Supplementary Material

Rational design of MOFs@Au@COFs catalyst with electron synergy for reduction of 4-nitrophenol

Shangjin Liu^{#,a}, Chunfeng Mao^{#,a}, Chenghan Yang^a, Pengda Hong^{* ,b} Min Zhu^a,
Yuming Zhou^a and Yiwei Zhang^{*,a}

^aSchool of Chemistry and Chemical Engineering, Southeast University, Jiangsu
Optoelectronic Functional Materials and Engineering Laboratory, Nanjing 211189, PR
China

^bHefei Xingyu Chemical Co, Ltd, PR China

*Corresponding authors.

E-mail addresses: zhangchem@seu.edu.cn (Y. Zhang)

[#]These authors contributed equally to this work.

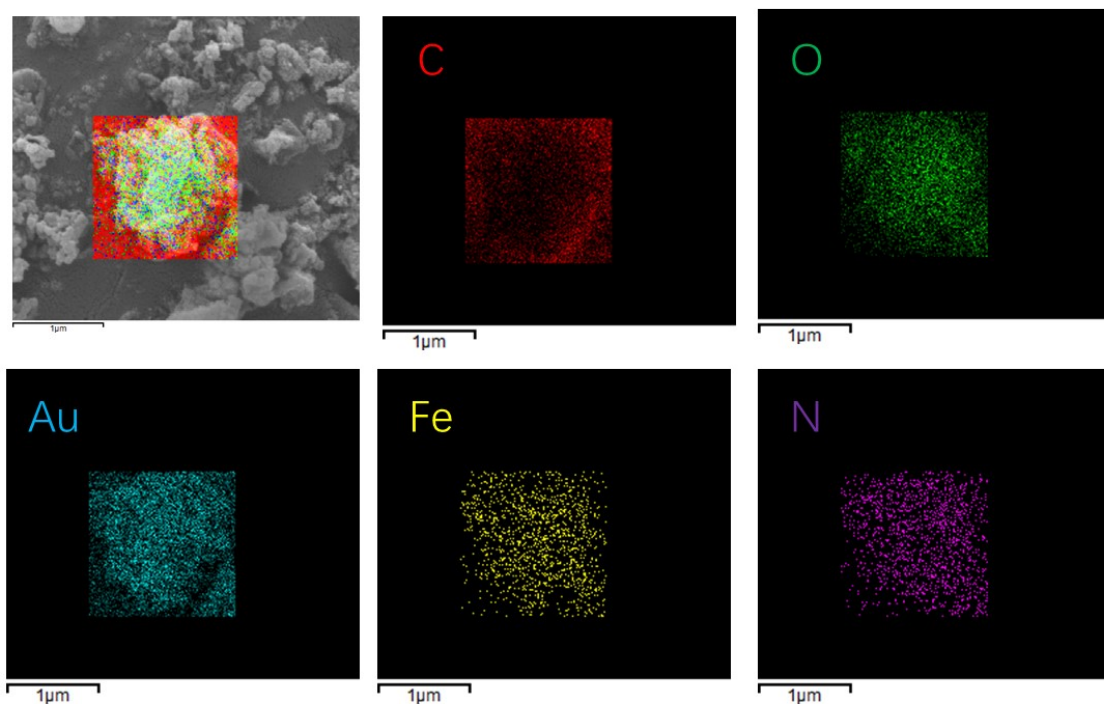


Fig.S1 EDS images of $\text{NH}_2\text{-MIL-88B(Fe)@Au@COFs}$ and analysis of C, O, Au, Fe and N elements

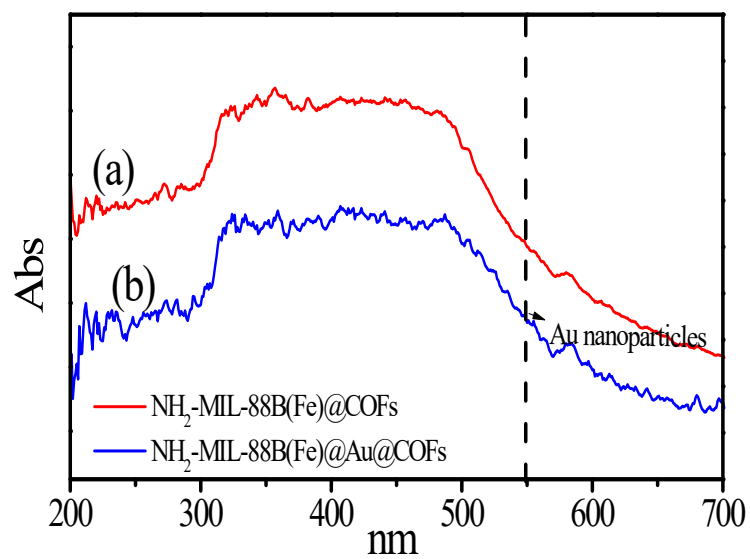


Fig.S2 UV-vis spectra of (a) NH₂-MIL-88B(Fe)@COFs and (b) NH₂-MIL-88B(Fe)@Au@COFs

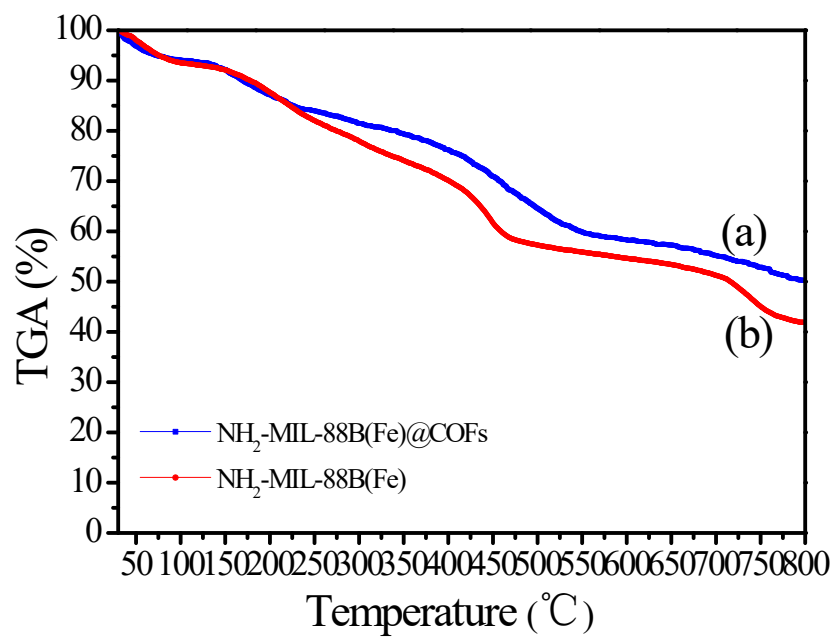
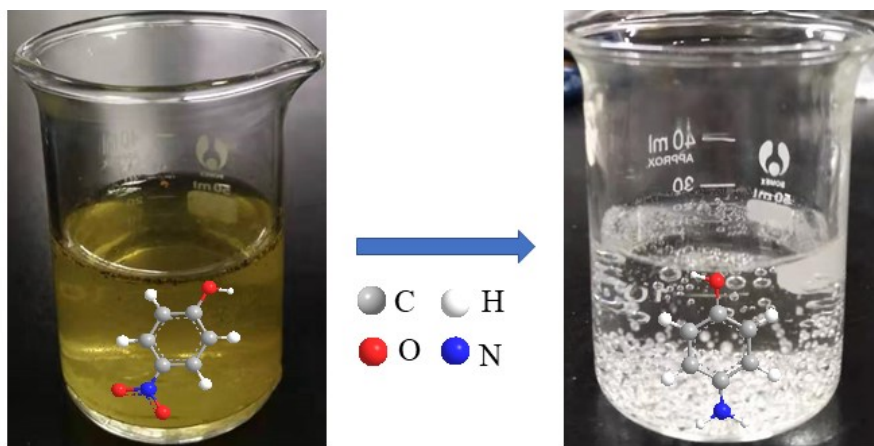


Fig.S3 TGA analysis of (a) NH₂-MIL-88B(Fe) @COFs and (b) NH₂-MIL-88B(Fe)



Before reaction at adding catalyst

After reaction at separating catalyst

Fig.S4 The change of the solution color before and after the reaction at the amplification experiment process

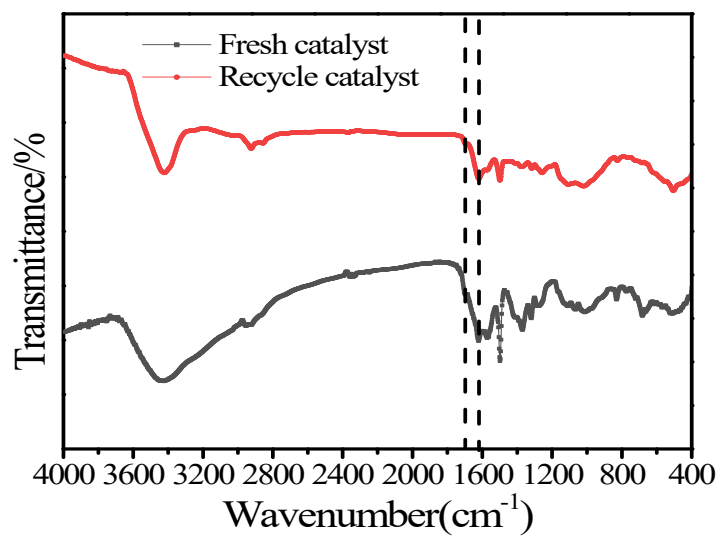


Fig.S5 FT-IR spectra of fresh catalyst and recycle catalyst

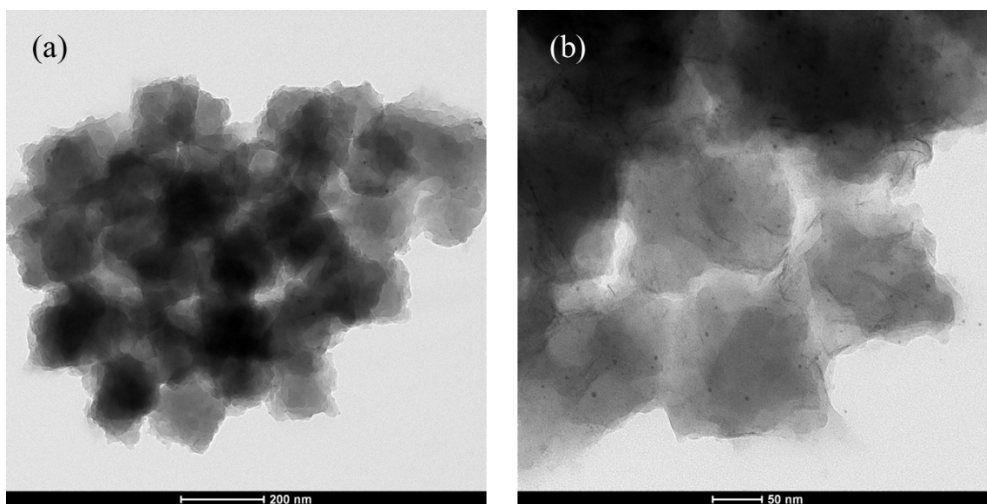


Fig.S6 TEM images of (a) $\text{NH}_2\text{-MIL-88B(Fe)@Au}$

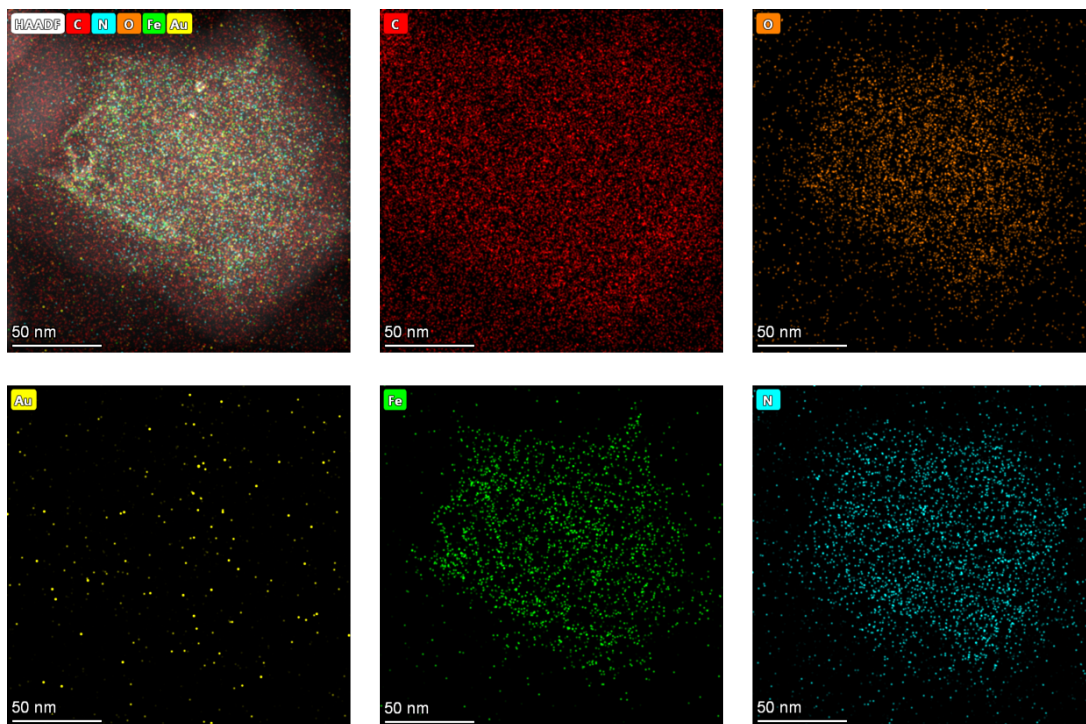


Fig.S7 EDS images of NH₂-MIL-88B(Fe)@Au and analysis of C, O, Au, Fe and N elements

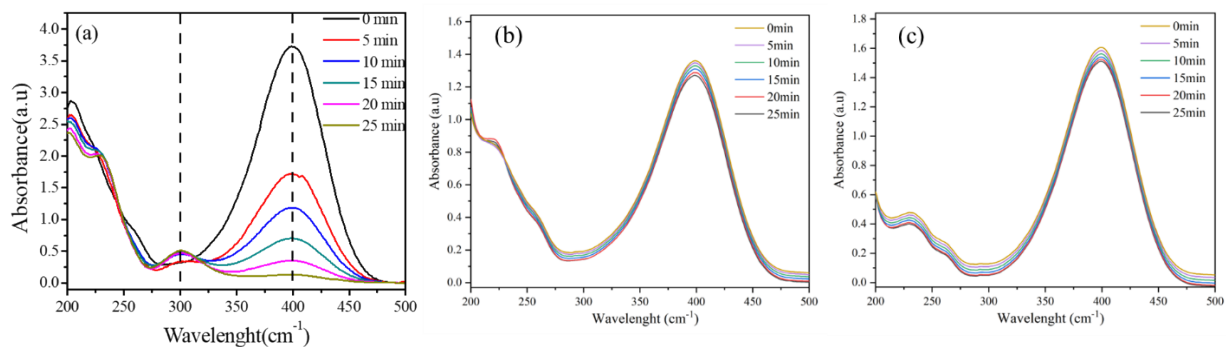


Fig.S8 UV-vis absorption spectra: (a) catalytic reduction of 4-nitrophenol by NH₂-MIL-88B(Fe)@Au@COFs; (b) the catalytic reduction of 4-nitrophenol by NH₂-MIL-88B(Fe)@Au; (c) the catalytic reduction of 4-nitrophenol by NaBH₄ in the absence of catalyst.

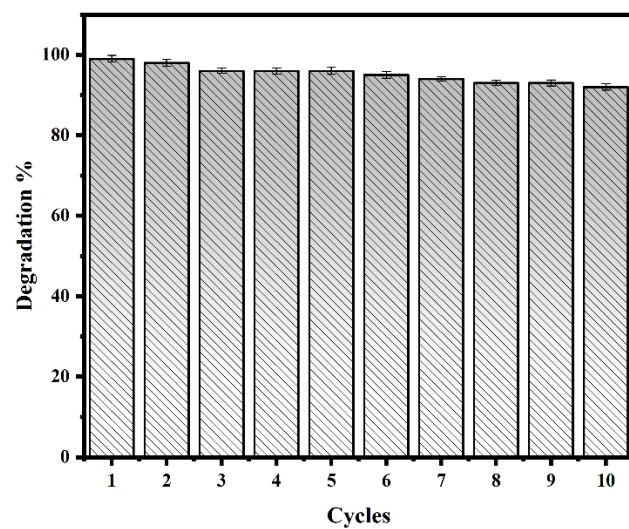


Fig.S9 Reusability of synthesized catalyst [NH₂-MIL-88B(Fe)@Au@COFs] for the reduction of 4NP in the presence of NaBH₄.