

## Electronic Supplementary Material

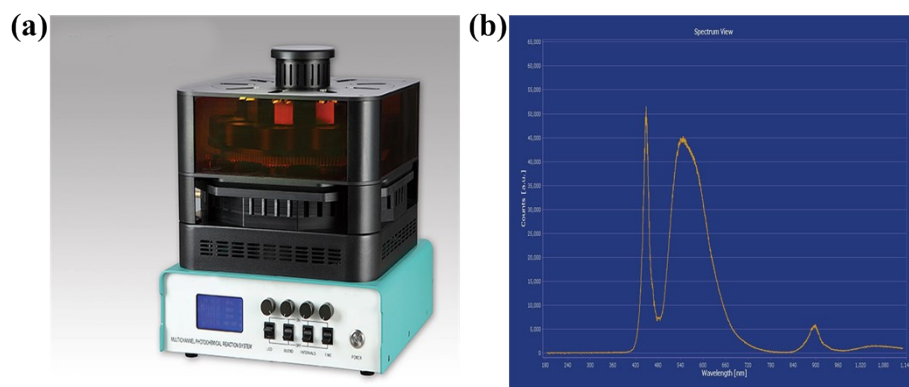
### **Facile fabrication of a visible-light stable metal-free g-C<sub>3</sub>N<sub>4</sub>/COF heterojunction with efficiently enhanced photocatalytic activity**

Jun Jiang,<sup>a</sup> Shiyuan Zhou,<sup>b</sup> Zhidong Chen,<sup>b\*</sup> Peiyang Gu,<sup>b\*</sup> Yuanyuan Li,<sup>c</sup> Qingfeng Xu<sup>c</sup>

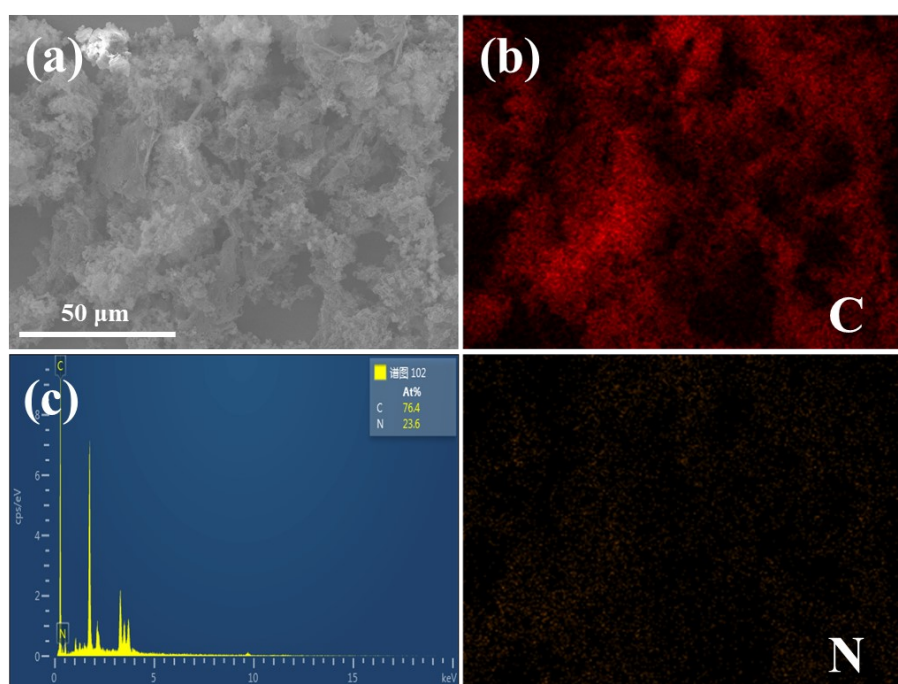
[a] School of Materials Science and Engineering, Changzhou University, Changzhou 213164, P. R. China. E-mail: zdchen@cczu.edu.cn

[b] Jiangsu Key Laboratory of Advanced Catalytic Materials and Technology, School of Petrochemical Engineering, Changzhou University, Changzhou 213164, P. R. China. E-mail: gupeiyang0714@cczu.edu.cn

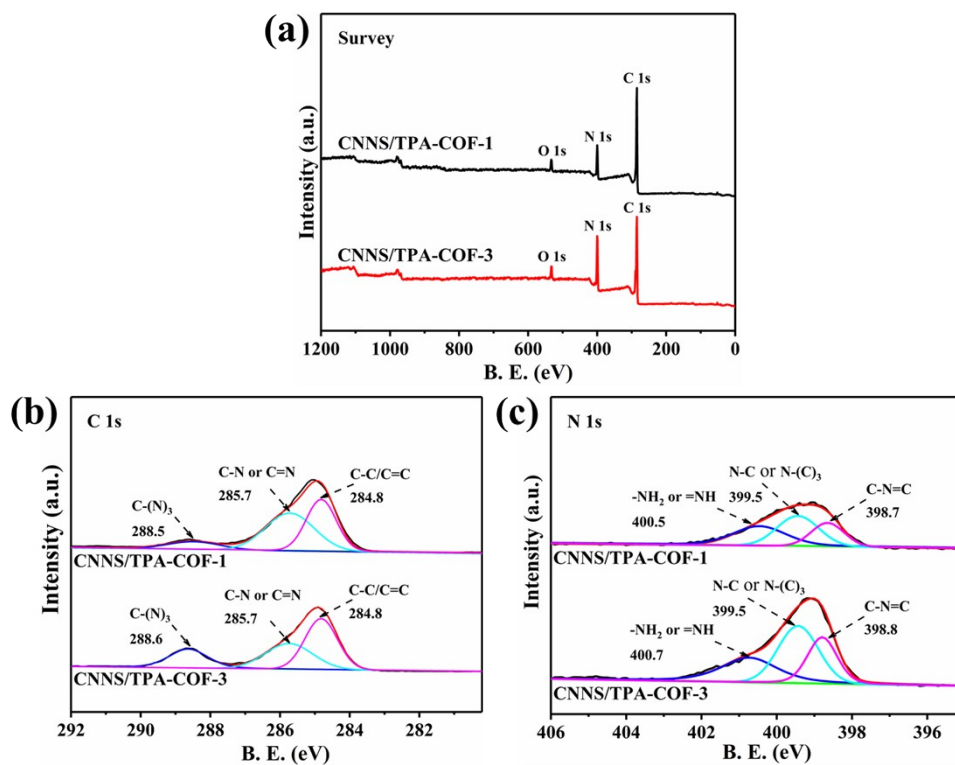
[c] College of Chemistry, Chemical Engineering and Materials Science, Collaborative Innovation, Center of Suzhou Nano Science and Technology, Soochow University, Suzhou, 215123, China.



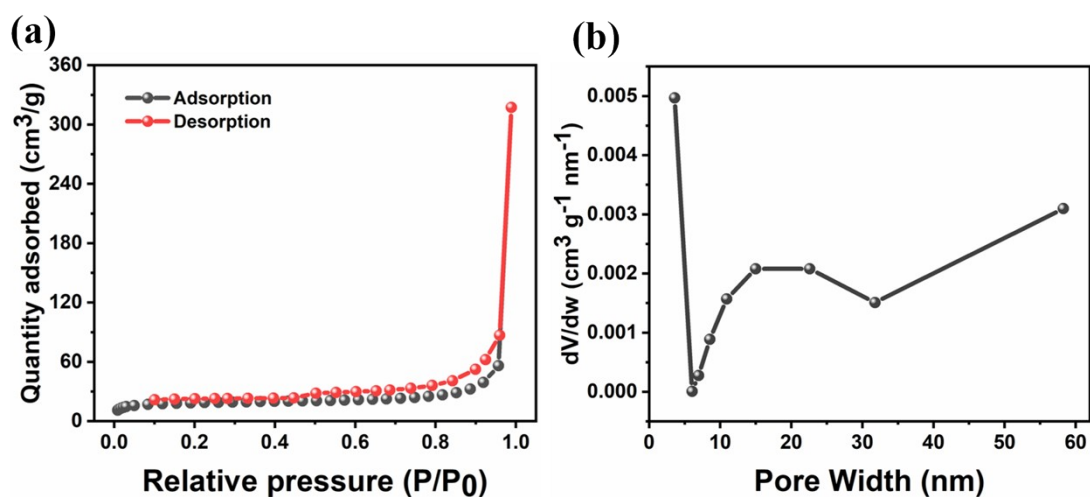
**Fig. S1** (a) The reactor with LED lamp as visible-light source and (b) its emission spectrum.



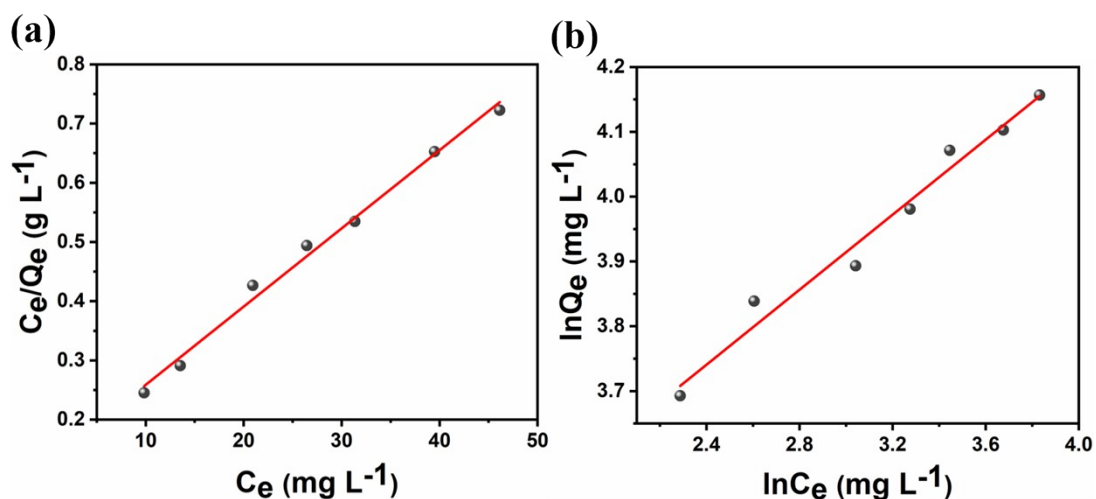
**Fig. S2** (a) SEM image of TPA-COF, (b) SEM EDX mappings of C and N, and (c) EDS spectrum of TPA-COF.



**Fig. S3** XPS spectra of CNNS/TPA-COF-1 and CNNS/TPA-COF-3: (a) survey scan, (b) C 1s and (c) N 1s.



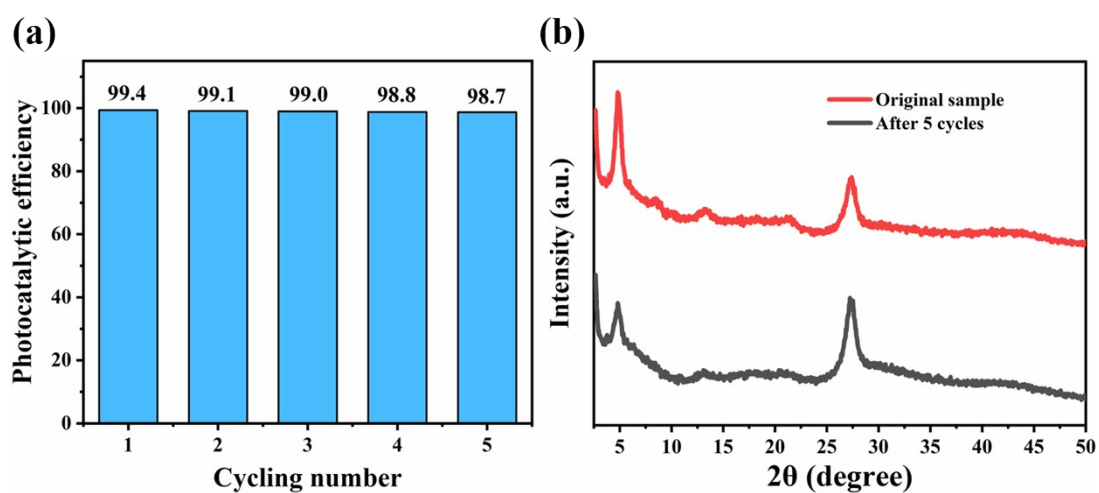
**Fig. S4** The (a) N<sub>2</sub> adsorption-desorption isotherms and (b) pore width distribution of CNNS/TPA-COF-2.



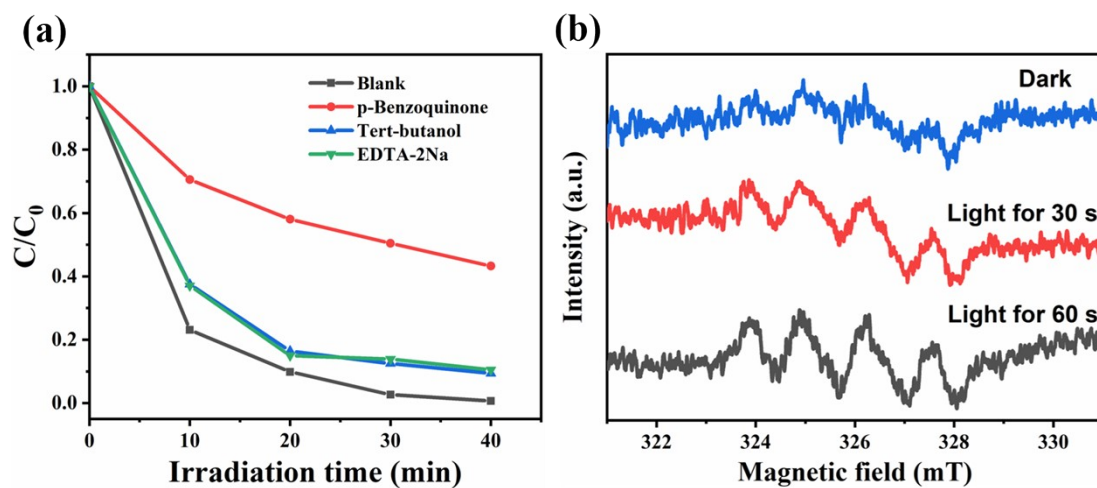
**Fig. S5** The fitting of (a) Langmuir model and (b) Freundlich model of CNNS/TPA-COF-2 towards RhB.

**Table. S1** The data of Langmuir model and Freundlich model of CNNS/TPA-COF-2 towards RhB

Adsorbent	Langmuir model			Freundlich model		
	$Q_m$ ( $\text{mg g}^{-1}$ )	$K_L$ ( $\text{L mg}^{-1}$ )	$R^2$	$K_F$ ( $\text{mg g}^{-1}$ )	$1/n$	$R^2$
CNNS/TPA -COF-2	75.7	0.1043	0.9922	21.034	0.2894	0.9762



**Fig. S6** The (a) photocatalytic efficiency and (b) XRD patterns of CNNS/TPA-COF-2 after five cycles.



**Fig. S7** (a) The quenching experiments of CNNS/TPA-COF-2 on RhB degradation; (b) the electron spin resonance experiments of  $\cdot O_2^-$  on the CNNS/TPA-COF-2