A novel efficient g-C_3N_4@BiOI p-n heterojunction photocatalyst constructed through the assembly of g-C_3N_4 nanoparticles

Zengyu You,[a] Chenyan Wu,[a] Qianhong Shen,[*a, b, c] Yang Yu,[a] Hao Chen,[a] Yuxuan Su,[a] Hui Wang,[a] Chunchun Wu,[b, c] Fang Zhang,[b] and Hui Yang[*a, b, c]

[a] State Key Laboratory of Silicon Materials, School of Materials Science and Engineering, Zhejiang University, Hangzhou P.R. China 310027

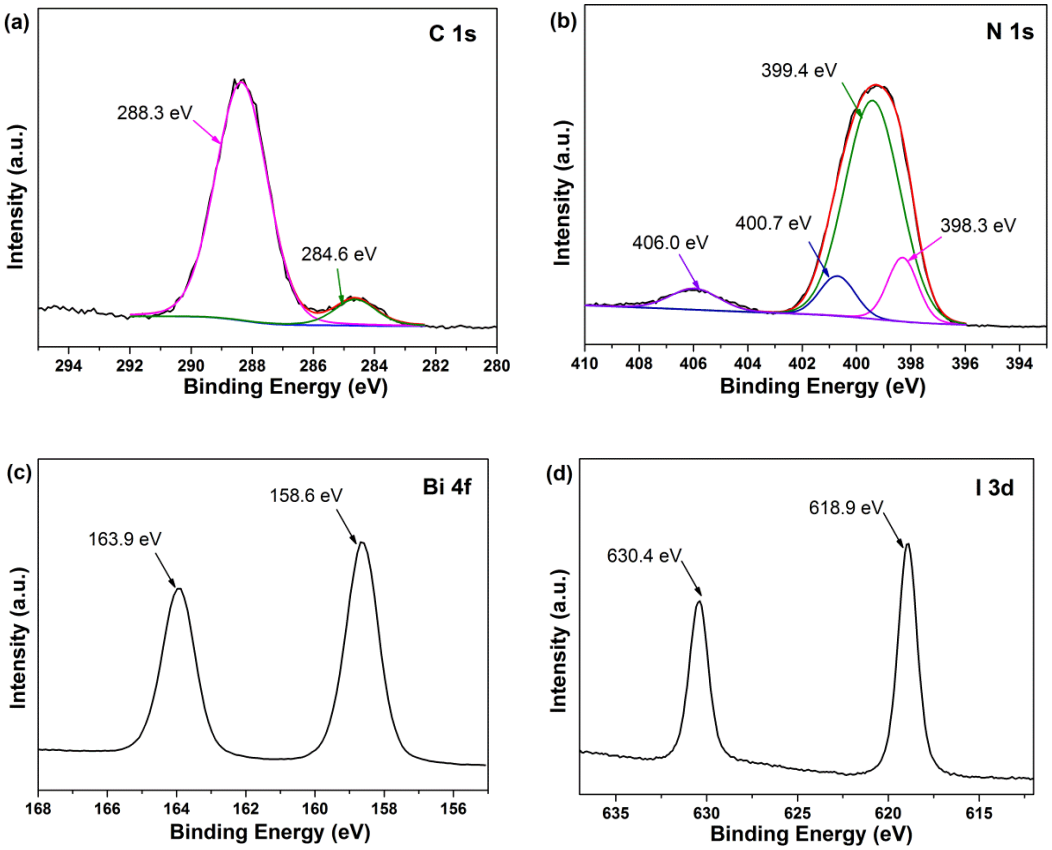
[b] Zhejiang-California International NanoSystems Institute, Zhejiang University, Hangzhou P.R. China 310058

[c] Zhejiang University and Zigong innovation center, Sichuan P.R. China 643000

**Corresponding author: E-mail: s_qianhong@163.com*

Tel.: +86-0571-87951408; +86-13071849049; fax: +86-571-87953054

Supporting Information



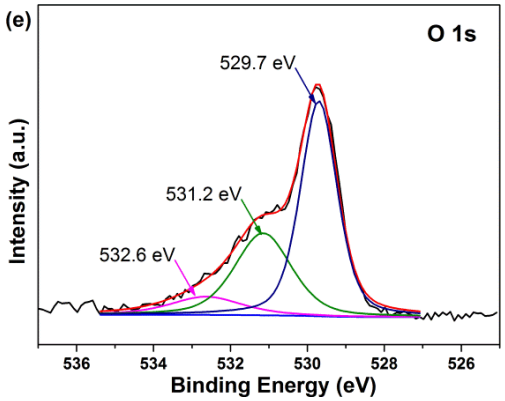


Fig. S1 High resolution XPS spectra of (a) C 1s and (b) N 1s in CNNP; (c) Bi 4f, (d) I 3d and (e) O 1s in FB.

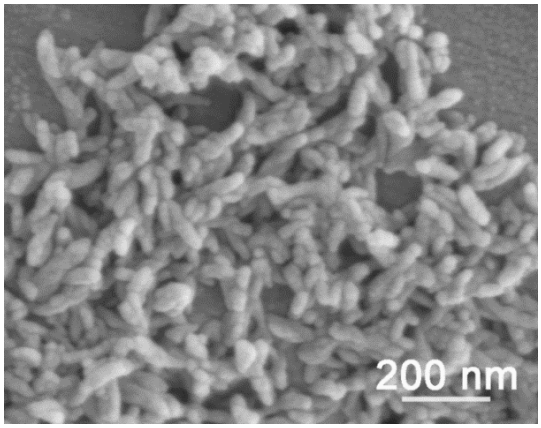
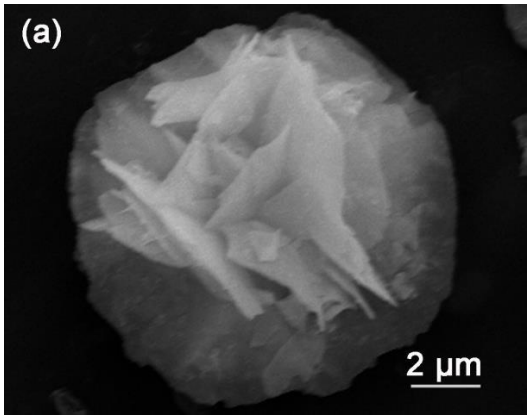
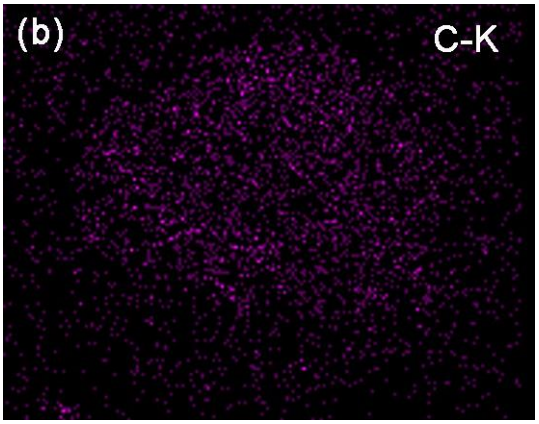


Fig. S2 High magnification SEM images of CNNP





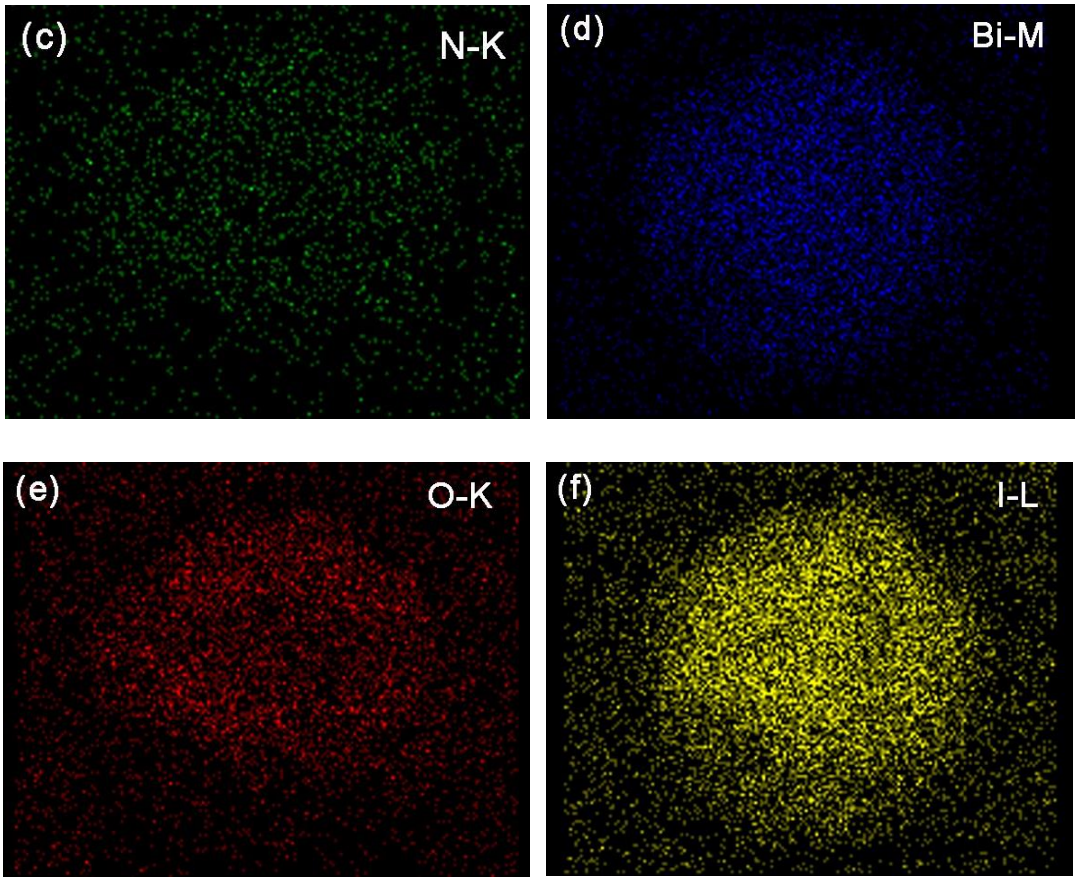


Fig. S3 (a) SEM image of 1CNNP@FB and corresponding EDS elemental mapping images of (b) C, (c) N, (d) Bi, (e) O and (f) I

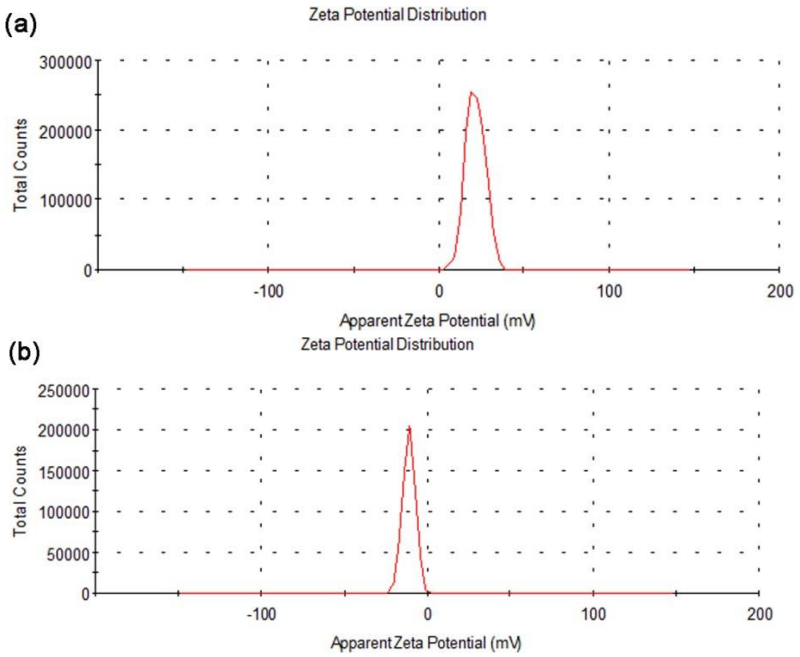


Fig. S4 Zeta potential of (a) CNNP and (b) FB dispersed in aqueous solution at room temperature

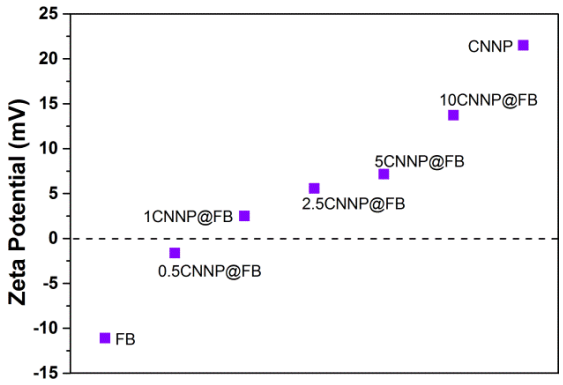


Fig. S5 Zeta potential of CNNP@FB composites dispersed in aqueous solution at room temperature

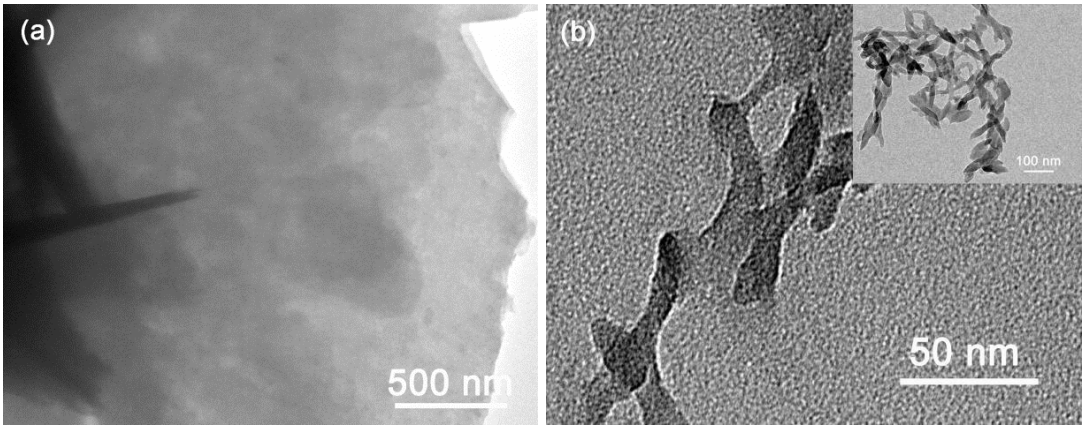


Fig. S6 (a) TEM image of FB and (b) HRTEM image of CNNP

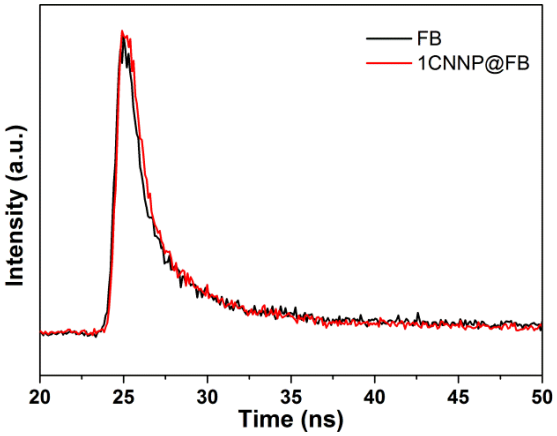


Fig. S7 Time-resolved fluorescence decay spectra of FB and 1CNNP@FB

Table S1 The radiative fluorescence lifetimes and their relative percentages of photo-generated charge carriers in the FB and 1CNNP@FB

Sample	τ_1 [ns]-Rel%	τ_2 [ns]-Rel%	τ_3 [ns]-Rel%	Average [ns]
FB	0.8-19.6	3.11-37.8	23.34-42.6	11.26
1CNNP@FB	1.12-32.6	4.94-41.0	28.99-26.4	12.58

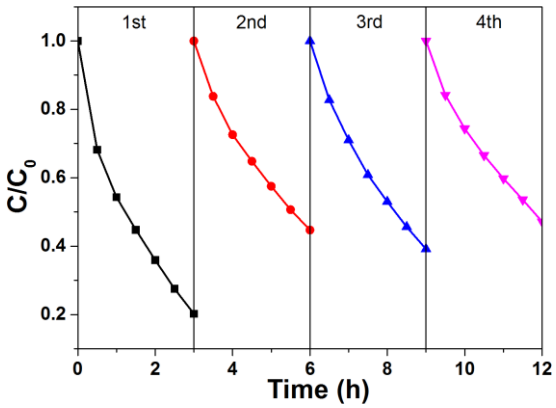


Fig. S8 Cycling runs for the photocatalytic degradation of MO over 1CNNP@FB

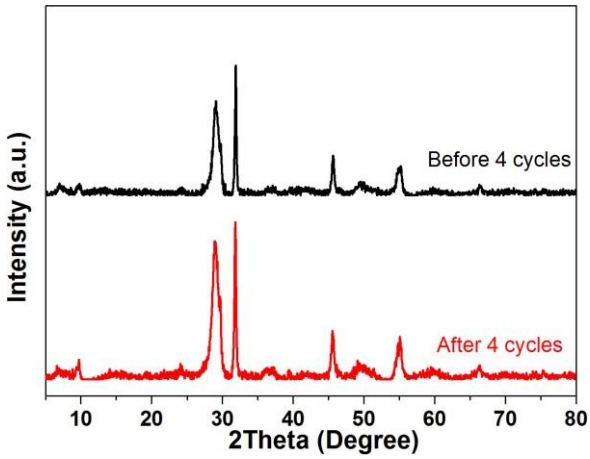


Fig. S9 XRD patterns of the 1CNNP@FB after 4 cycles

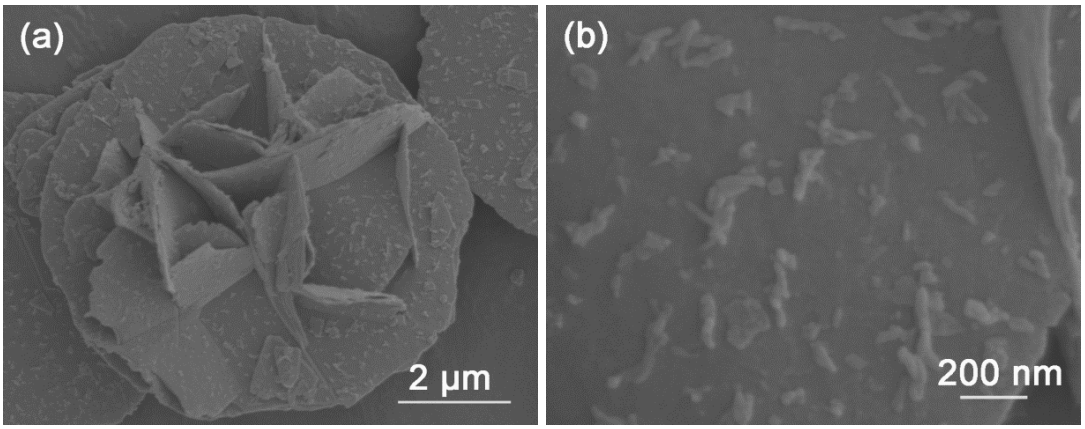


Fig. S10 (a) SEM image and (b) high magnification SEM image of the 1CNNP@FB after 4 cycles

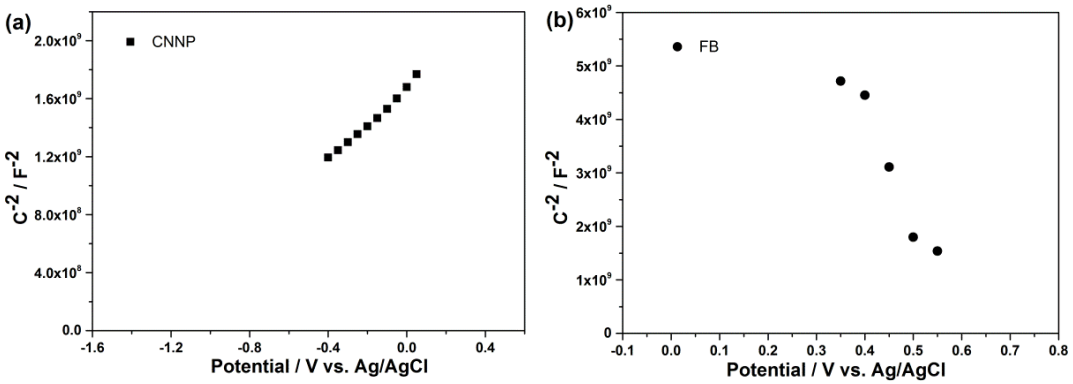


Fig. S11 Mott–Schottky plots of (a) CNNP and (b) FB