Supporting Information

Ultra-thin coating of g-C_3N_4 on an aligned ZnO nanorod film for rapid charge separation and improved photodegradation performance

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Figure captions:

Figure S1. Field-emission scanning electron microscope (FE-SEM) surface images of (a) 1D ZnO/gC_3N_4_1, (b) ZnO/gC_3N_4_2 and (c) ZnO/gC_3N_4_3.

Figure S2. XRD patterns of 1D ZnO nanorods, pure g-C_3N_4 and the 1D ZnO/gC_3N_4 films as a function of melamine amount.

Figure S3. (a) A linear potential sweep voltammetry plot and the (b) photocurrent density of the ZnO nanorod film and the 1D ZnO/gC_3N_4 films as a function of melamine amount under visible-light irradiation. EIS Nyquist plots of the ZnO nanorod film and the 1D ZnO/gC_3N_4 films as a function of melamine amount (c) in the dark and (d) under visible-light irradiation.

Figure S4. (a) Ultraviolet–visible (UV-Vis) absorbance spectra and (b) a plot of the Kubelka−Munk function of the ZnO nanorod film and the 1D ZnO/gC_3N_4 films as a function of melamine amount.

Figure S5. The temporal absorption spectral changes of MB dye during its photodegradation in the presence of (a) the ZnO nanorods films, (b) g-C3N4 films and (c) the 1D ZnO/gC_3N_4 films.

Figure S6. The weight of the 1D ZnO/gC_3N_4 films (a) before first photocatalytic reaction, (b) after first photocatalytic reaction and (c) after second photocatalytic reaction.

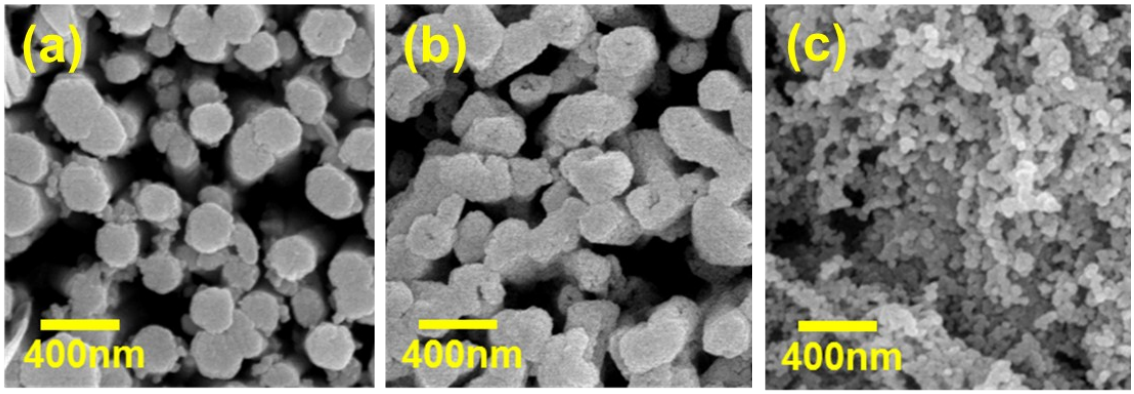

Figure S1. (a)-(c)

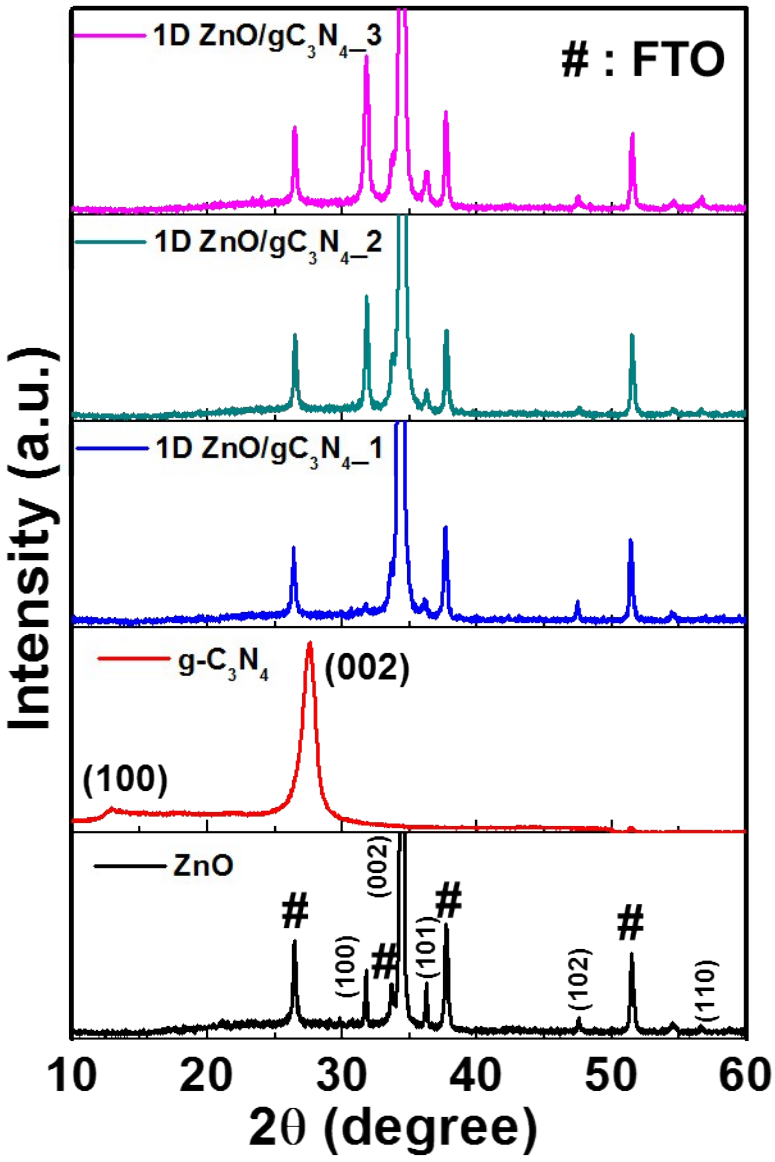
1D ZnO/gC3N4_3
: FTO
1D ZnO/gC3N4_2
1D ZnO/gC3N4_1
g-C3N4
(002)
(100)
ZnO
(002)
(100)
(101)
(102)
(110)
#
Intensity (a.u.)
10
20
30
40
50
60
2θ (degree)

Figure S2.

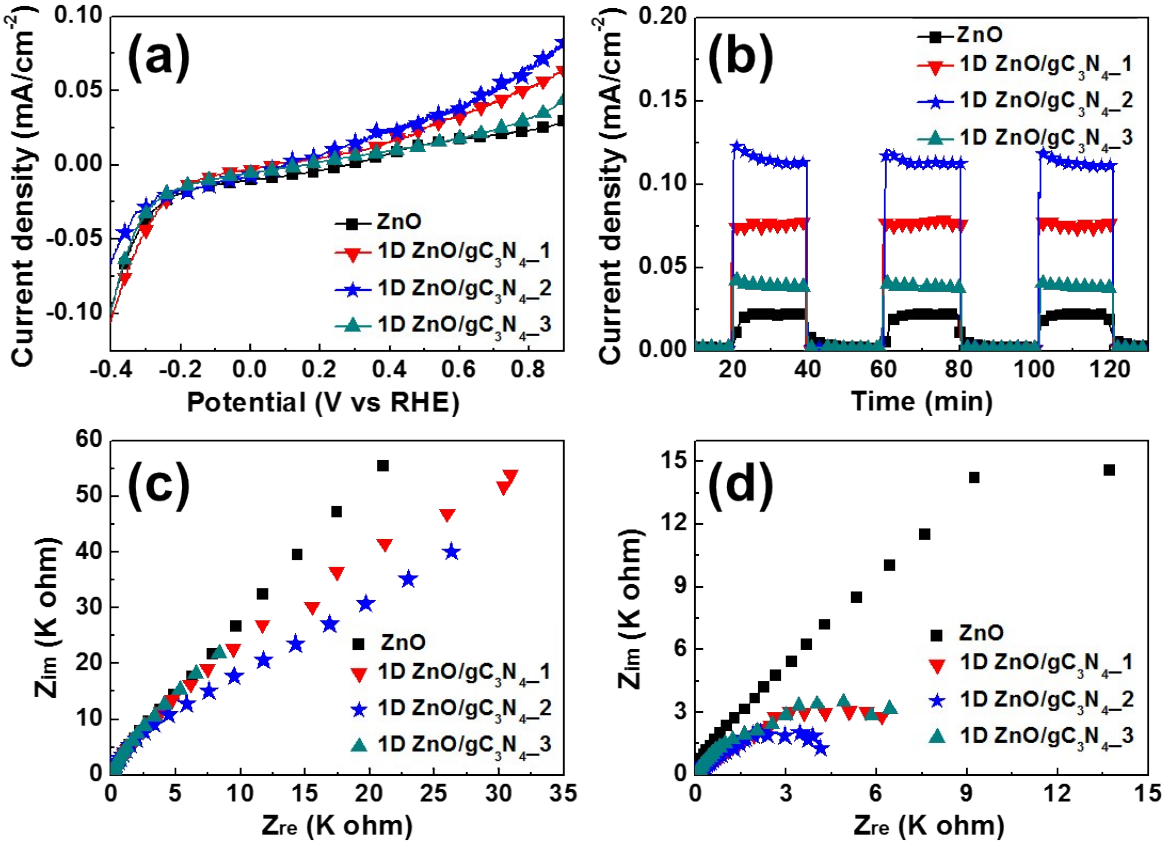
(a)
Current density (mA/cm-2)
Potential (V vs RHE)
ZnO
1D ZnO/gC3N4_1
1D ZnO/gC3N4_2
1D ZnO/gC3N4_3
(b)
Current density (mA/cm-2)
Time (min)
ZnO
1D ZnO/gC3N4_1
1D ZnO/gC3N4_2
1D ZnO/gC3N4_3
(c)
Zim (K ohm)
Zre (K ohm)
ZnO
1D ZnO/gC3N4_1
1D ZnO/gC3N4_2
1D ZnO/gC3N4_3
(d)
Zim (K ohm)
Zre (K ohm)
ZnO
1D ZnO/gC3N4_1
1D ZnO/gC3N4_2
1D ZnO/gC3N4_3

Figure S3. (a)-(d)

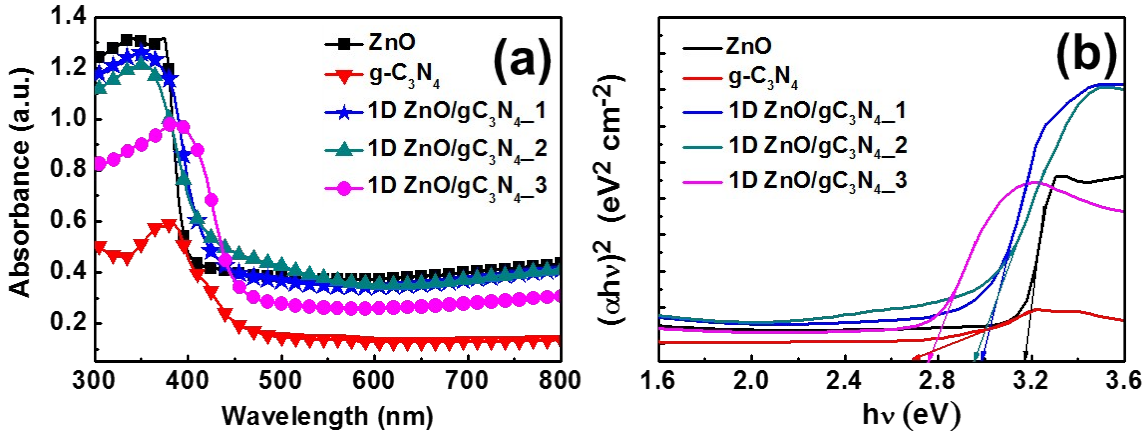
(a)
ZnO
g-C3N4
1D ZnO/gC3N4_1
1D ZnO/gC3N4_2
1D ZnO/gC3N4_3
Absorbance (a.u.)
Wavelength (nm)
(b)
(αhν)2 (eV2 cm-2)
hν (eV)

Figure S4. (a),(b)

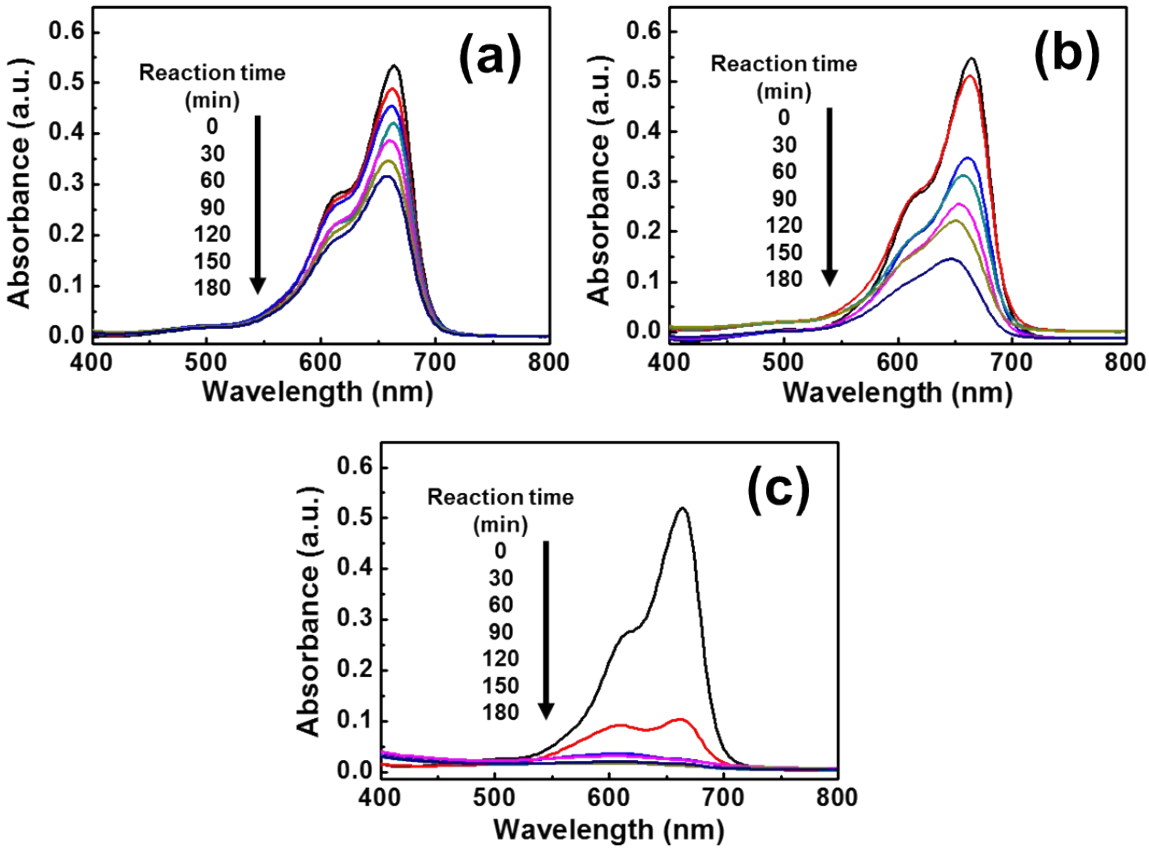
(a)
(b)
(c)
Reaction time
(min)
0
30
60
90
120
150
180
Absorbance (a.u.)
Wavelength (nm)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
400
500
600
700
800

Figure S5. (a)-(c)

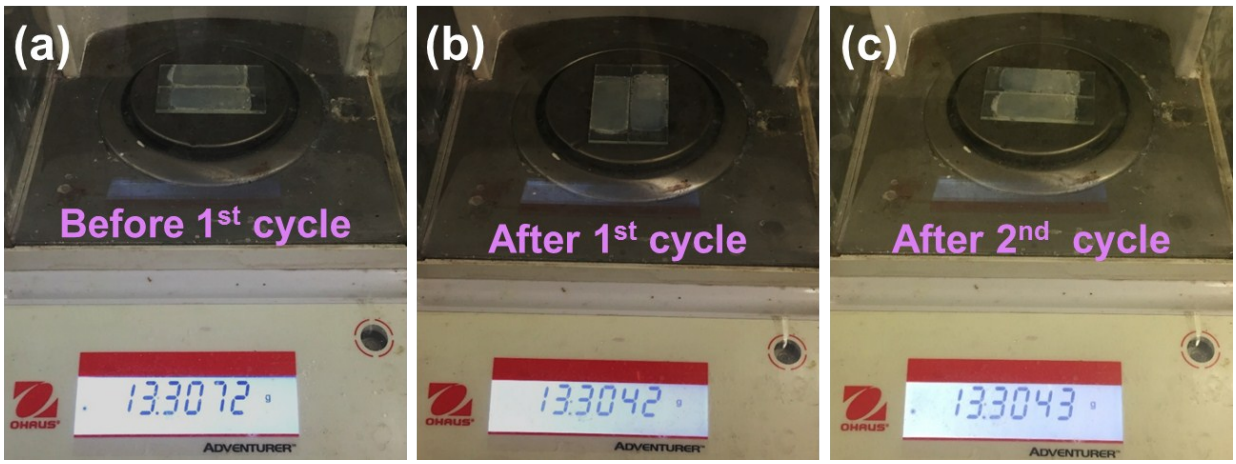
(a)
Before 1st cycle
13.3072 g
OHAUS
ADVENTURER
(b)
After 1st cycle
13.3042 g
OHAUS
ADVENTURER
(c)
After 2nd cycle
13.3043 g
OHAUS
ADVENTURER

Figure S6. (a)-(c)