Supplementary Information

High-performance NiO/g-C₃N₄ composites for visible-lightdriven photocatalytic overall water splitting

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Additional Tables

Table S1.	The Brunauer-Emmett-Teller (BET) specific surface area and average pore width of
NiO/C ₃ N ₄	with different NiO contents obtained at different temperatures.

Sample name	BET specific surface area (m^2/g)	Average pore width (nm)
g-C ₃ N ₄	5.76	30.32
NiO/g-C ₃ N ₄ /1/300	9.56	27.87
NiO/g-C ₃ N ₄ /3/300	21.66	16.51
NiO/g-C ₃ N ₄ /5/300	11.76	20.04
NiO/g-C ₃ N ₄ /3/200	11.52	14.45
NiO/g-C ₃ N ₄ /3/400	16.10	17.53

Additional Figures



Fig. S1 (a and b) TEM images of $g-C_3N_4$ with different scale bars. (c) HAADF-STEM image and (d and e) corresponding elemental mapping images of $g-C_3N_4$.



Fig. S2 Full XPS spectrum of NiO/g-C₃N₄/3/300.



Fig. S3 High-resolution XPS spectra of NiO for (a) Ni 2p and (b) O 1s.



Fig. S4 XRD patterns of g-C₃N₄ (black line) and NiO/g-C₃N₄/300 with different NiO contents.



Fig. S5 (a) FT-IR spectra of $g-C_3N_4$ and NiO/ $g-C_3N_4/300$ with different NiO contents. (b) FT-IR spectra of $g-C_3N_4$ and NiO/ $g-C_3N_4/3$ obtained at different temperatures.



Fig. S6 UV-vis absorption spectra of g-C₃N₄ and NiO/g-C₃N₄/300 with different NiO contents.



Fig. S7 (a) Full XPS spectra of $g-C_3N_4$ and NiO/ $g-C_3N_4/300$ with different NiO contents. (b) Full XPS spectra of $g-C_3N_4$ and NiO/ $g-C_3N_4/3$ obtained at different temperatures.



Fig. S8 (a) High-resolution XPS spectra of NiO/g-C₃N₄/3/400 for Ni 2p. (b) High-resolution XPS spectra of NiO/g-C₃N₄/3/400 for O 1s.



Fig. S9 High-resolution XPS spectra of $g-C_3N_4$ and NiO/ $g-C_3N_4/3$ obtained at different temperatures for (a) C 1s and (b) N 1s.



Fig. S10 High-resolution XPS spectra of $g-C_3N_4$ and NiO/ $g-C_3N_4/300$ with different NiO contents for (a) C 1s, (b) N 1s, (c) O 1s and (d) Ni 2p.



Fig. S11 PL spectra of NiO (black line), $g-C_3N_4$ (red line) and NiO/ $g-C_3N_4/300$ with different NiO contents with excitation wavelength of 360 nm.



Fig. S12 (a, c, e, g, i and k) N₂ adsorption-desorption isotherms of $g-C_3N_4$, NiO/ $g-C_3N_4/1/300$, NiO/ $g-C_3N_4/3/300$, NiO/ $g-C_3N_4/5/300$, NiO/ $g-C_3N_4/3/200$ and NiO/ $g-C_3N_4/3/400$, respectively. (b, d, f, h, j and l) Pore size distribution curves of $g-C_3N_4$, NiO/ $g-C_3N_4/1/300$, NiO/ $g-C_3N_4/3/300$, NiO/ $g-C_3N_4/5/300$, NiO/ $g-C_3N_4/3/200$ and NiO/ $g-C_3N_4/5/300$, NiO/ $g-C_3N_4/3/200$ and NiO/ $g-C_3N_4/3/400$, respectively.



Fig. S13 (a) XRD patterns, (b) FTIR spectra, (c) Full XPS spectra of $NiO/g-C_3N_4/3/300$ before (black line) and after (red line) photocatalytic reaction.



Fig. S14 High-resolution XPS spectra of NiO/g-C₃N₄/3/300 for (a) C 1s, (b) N 1s, (c) O 1s, (d) Ni 2p before (black line) and after (red line) photocatalytic reaction.