One-step Preparation of Iodine-doped Graphitic Carbon Nitride Nanosheets as Efficient Photocatalysts for Visible Light Water Splitting

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**Fig. S1** TEM image of bulk GCN (a) and high-resolution TEM image of IGCNSs\(_{1/2}\) (b). The scale bars are 500 nm for (a) and 100 nm for (b), respectively.

**Fig. S2** XRD patterns of the bulk GCN, IGCNSs\(_{1/4}\), IGCNSs\(_{1/3}\), IGCNSs\(_{1/2}\) and IGCNSs\(_{1/1}\).
Fig. S3 IR spectra of the bulk GCN, IGCNSs$_{1/4}$, IGCNSs$_{1/3}$, IGCNSs$_{1/2}$ and IGCNSs$_{1/1}$.

Fig. S4 Photographs of bulk GCN (1), IGCNSs$_{1/4}$ (2), IGCNSs$_{1/3}$ (3), IGCNSs$_{1/2}$ (4) and IGCNSs$_{1/1}$ (5) dispersed solutions in water with concentrations of 0.1 mg mL$^{-1}$ after one month under ambient conditions.

Fig. S5 Nitrogen adsorption–desorption isotherms of the bulk GCN, $I$-free GCNSs, IGCNSs$_{1/4}$, IGCNSs$_{1/3}$, IGCNSs$_{1/2}$ and IGCNSs$_{1/1}$.
Fig. S6 (a) AFM image of IGCNS$_{1/2}$ on the Si substrate. (b) Height profile along the line in (a). The scale bar is 1 μm.

Fig. S7 High-resolution XPS spectra of C 1s (a) and N 1s (b) for the bulk GCN.
Fig. S8 (a) Color of bulk GCN (1), IGCNS_{1/4} (2), IGCNS_{1/3} (3), IGCNS_{1/2} (4) and IGCNS_{1/1} (5). (b) UV-Vis diffuse reflection spectra of the aforementioned samples.

Fig. S9 PL spectra of bulk GCN, IGCNS_{1/4}, IGCNS_{1/3}, IGCNS_{1/2} and IGCNS_{1/1} with the excitation wavelength of 380 nm.