

Supporting Information

## **Highly Efficient g-C<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub> Heterojunction: The role of SiO<sub>2</sub> for the Enhanced Visible Light Photocatalytic Activity**

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1. Figure S1: Fourier Transform Infrared Spectrometer (FTIR) of prepared samples.

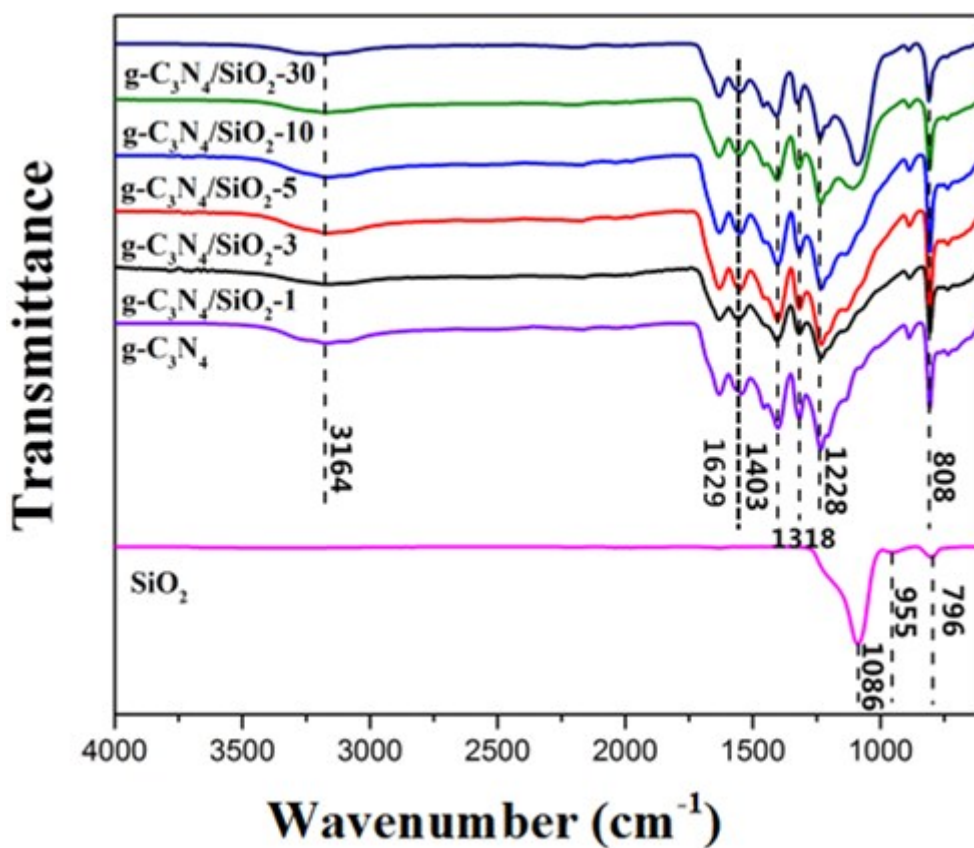
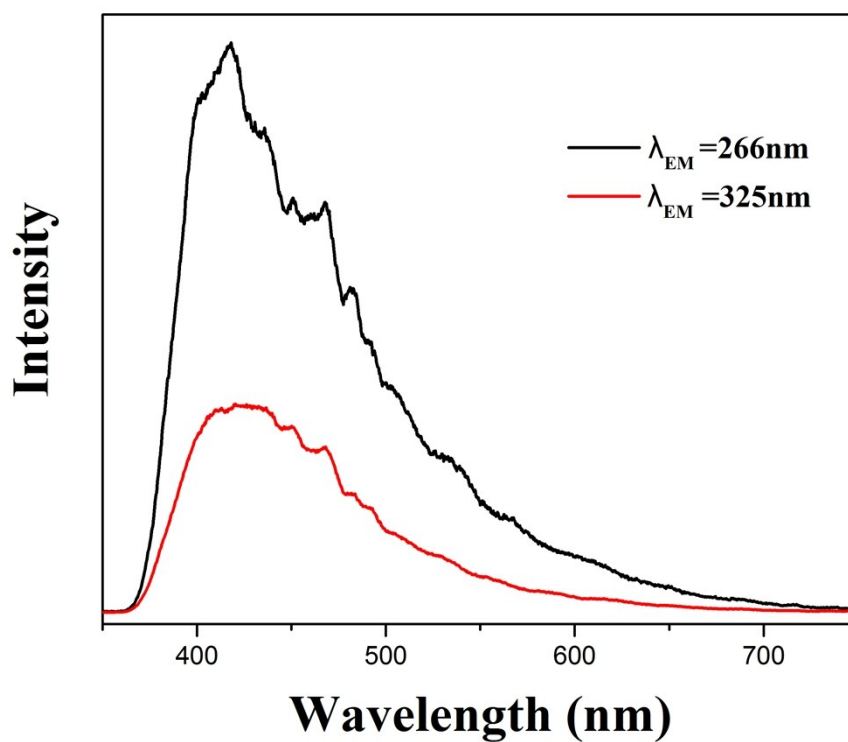


Figure S1. FT-IR spectra of g-C<sub>3</sub>N<sub>4</sub>, SiO<sub>2</sub> and g-C<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub> samples.

Figure S1 shows the FT-IR spectra of g-C<sub>3</sub>N<sub>4</sub>, SiO<sub>2</sub> and g-C<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub> samples. In the FT-IR spectrum of g-C<sub>3</sub>N<sub>4</sub>, the peak at 1629 cm<sup>-1</sup> is attributable to the C=N stretching vibration modes, while the peaks at 1228 cm<sup>-1</sup>, 1318 cm<sup>-1</sup> and 1403 cm<sup>-1</sup> are due to the aromatic C-N stretching.<sup>1-3</sup> The peak at 808 cm<sup>-1</sup> is related to the s-triazine ring modes.<sup>4</sup> The peak at 1086 cm<sup>-1</sup> is a Si-O-Si antisymmetric stretching and the peak at 796 cm<sup>-1</sup> is Si-O symmetric stretching. The peak at 955 cm<sup>-1</sup> is caused by the bending vibration of Si-OH. With the increase of SiO<sub>2</sub>, a small peak at 1086 cm<sup>-1</sup> can be

observed in the g-C<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub> composites, but the wavenumber has not changed which means the force between g-C<sub>3</sub>N<sub>4</sub> and SiO<sub>2</sub> is a physical process, rather than chemical action.

## 2. Fluorescence spectrum (PL) of SiO<sub>2</sub>



**Figure S2. Fluorescence spectrum (PL) of SiO<sub>2</sub> under excitation by the 266 nm and 325 nm lasers**

Under excitation by the 266 nm and 325 nm lasers, SiO<sub>2</sub> has a lot of peaks, indicating its impurity energy level. The valence band maximum is mainly composed

of the by O 2p orbital<sup>5</sup> and the energy levels of the surface states for quartz are at least 2.19 eV to 3.08 eV above the valence band.

### **Reference:**

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