

Supporting Information for

**Bifunctional defect mediated direct Z-scheme g-C₃N_{4-x}/Bi₂O_{3-y}
heterostructures with enhanced piezo-photocatalytic properties for
efficient tooth whitening and biofilms eradication**

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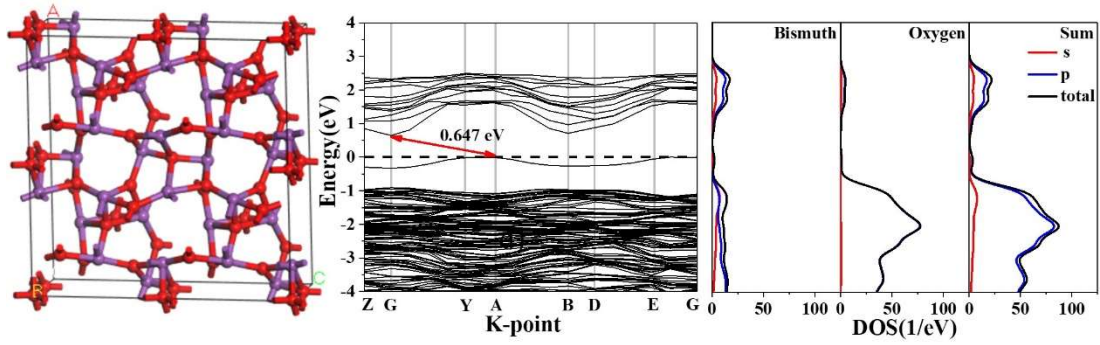


Fig. S1 Structure models, calculated band structures, corresponding DOS of β -Bi₂O_{3- γ} (2 \times 2 \times 1) supercell.

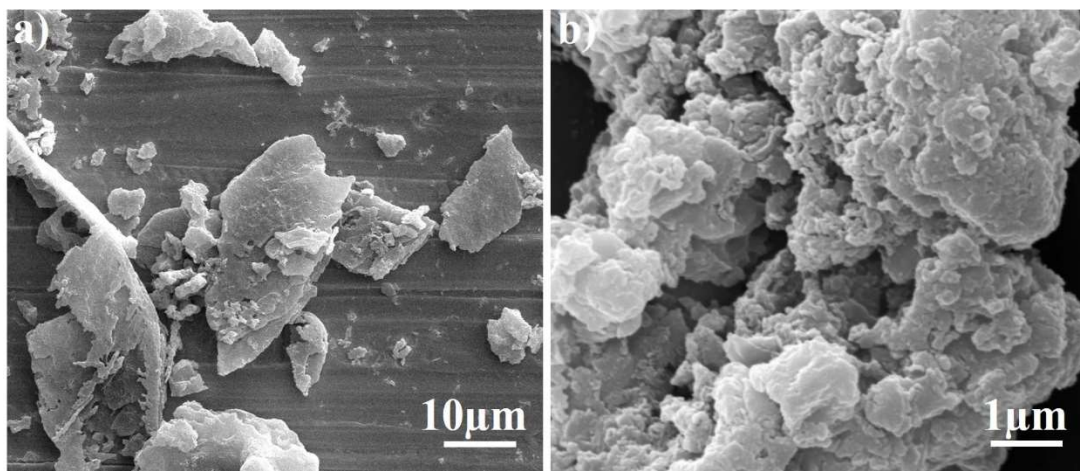


Fig. S2 FESEM images of samples. a) g-C₃N₄ and b) N-deficient g-C₃N_{4-x}

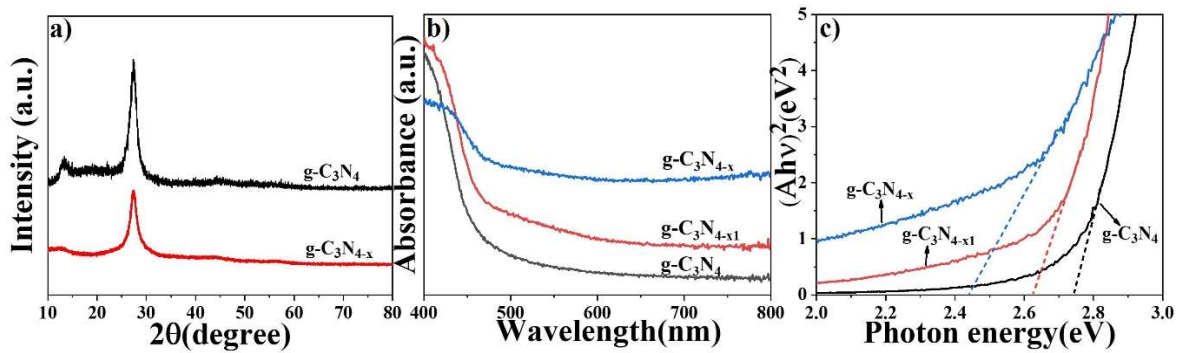


Fig. S3 a) XRD patterns, b) UV-Vis DRS spectra, c) Plots of transformed Kubelka-Munk function versus photon energy for g-C₃N₄, g-C₃N_{4-x1} and g-C₃N_{4-x}.

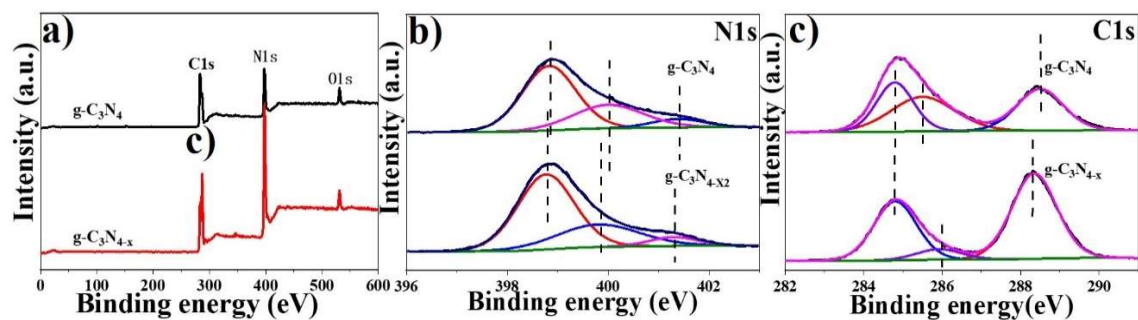


Fig. S4 XPS spectra of $g\text{-C}_3\text{N}_4$ and N-deficient $g\text{-C}_3\text{N}_{4-x}$ samples. a) Survey spectra; b) N1s; c) C1s.

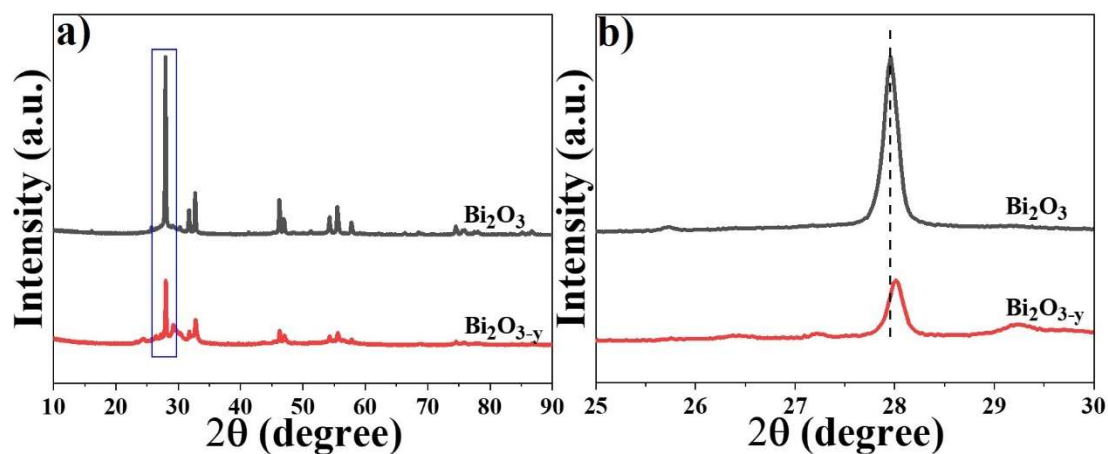


Fig. S5 a) XRD patterns of Bi_2O_3 and $\text{Bi}_2\text{O}_{3-y}$; b) The enlarged part of a).

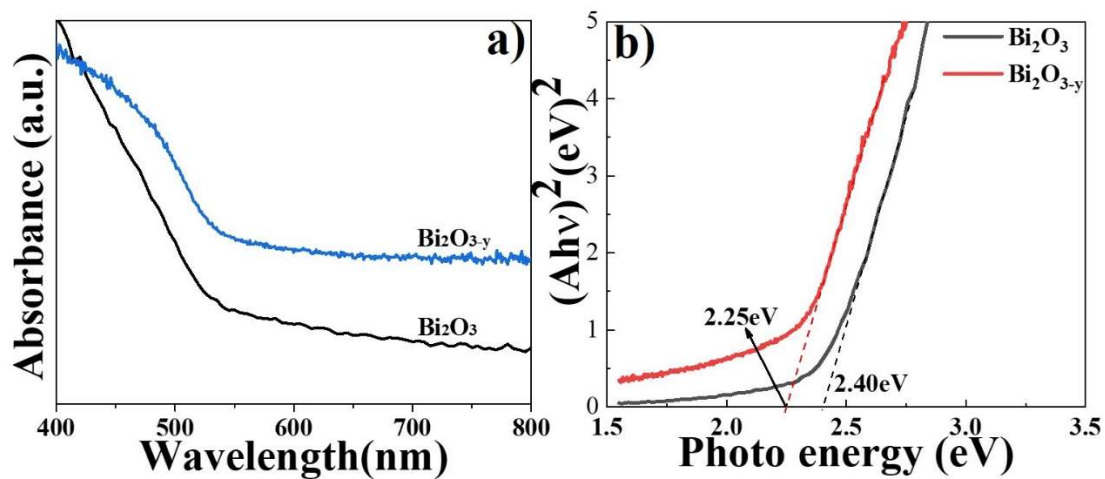


Fig. S6 UV-Vis DRS spectra a) and Plots of transformed Kubelka-Munk function versus photon energy b) for Bi_2O_3 and $\text{Bi}_2\text{O}_{3-y}$.