

Supporting Information

Extended Visible Light Absorption Combined with Promoted Charge Carrier Transfer in Urea Derived Graphitic Carbon Nitride for Enhanced Photocatalytic Hydrogen Evolution Performances

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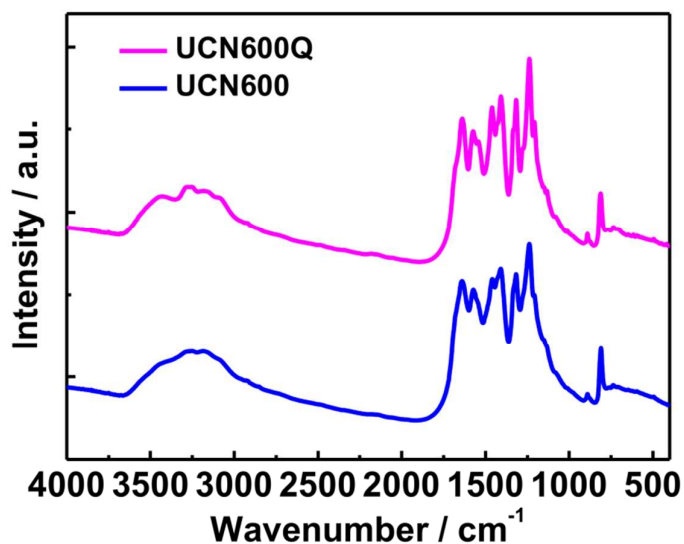


Figure S1. The FTIR spectra of UCN600 and UCN600Q.

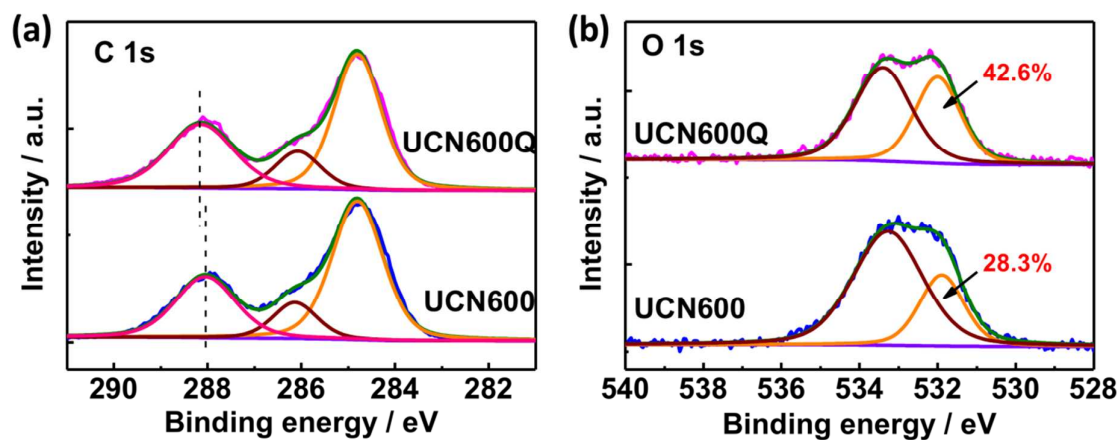


Figure S2. The deconvoluted (a) C 1s and (b) O1s spectra of UCN600 and UCN600Q recorded by high resolution XPS characterization.

Table S1. The elemental analysis results of the samples.

Samples	UCN500	UCN500Q	UCN600	UCN600Q
N[at%]/C[at%]	1.522	1.455	1.487	1.482

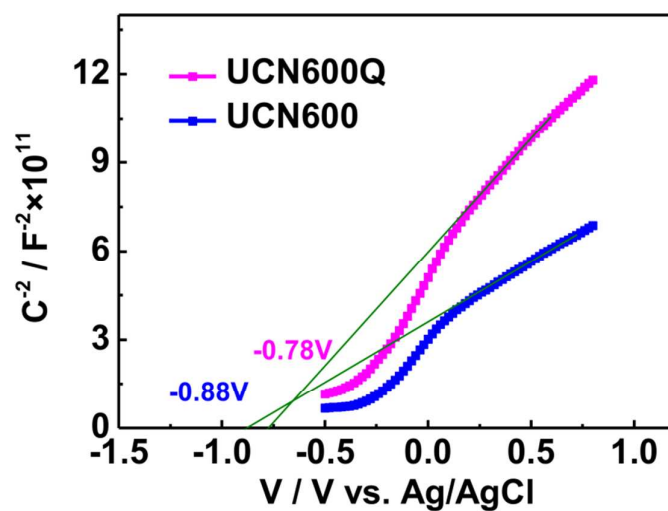


Figure S3. The Mott-Schottky plots of UCN600 and UCN600Q.

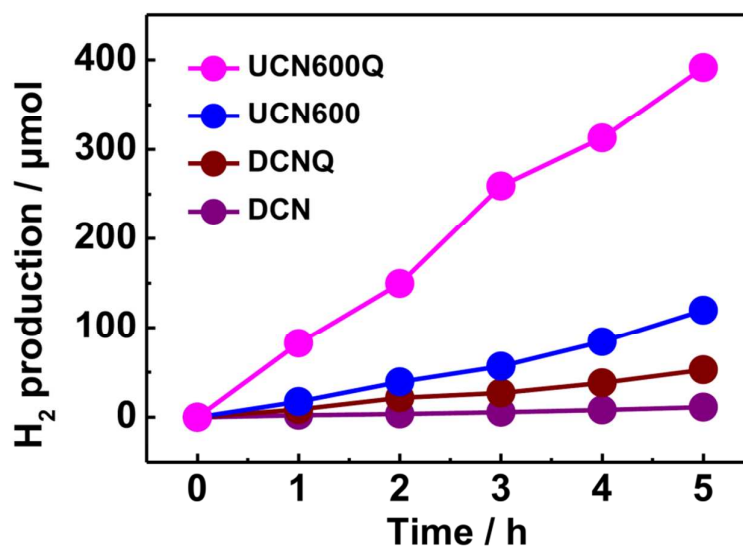


Figure S4. The time courses of hydrogen evolution for DCN, DCNQ, UCN600 and UCN600Q under visible light irradiation ($\lambda > 420 \text{ nm}$). The reaction was carried out in water containing 10 vol% triethanolamine with 6 wt% Pt loaded photocatalysts (20 mg).

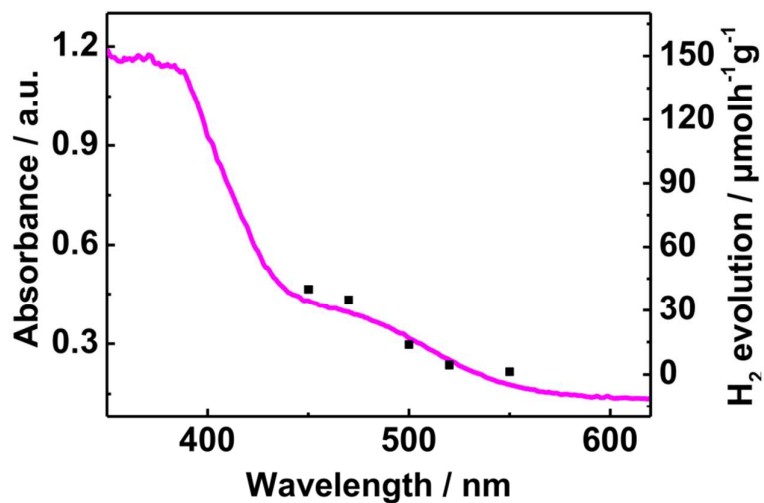


Figure S5. The UV-Vis spectra and the wavelength dependent photocatalytic hydrogen production activities of UCN600Q. The reaction was carried out in water containing 10 vol% triethanolamine with 6 wt% Pt loaded photocatalysts (20 mg). The intensity of each monochromatic light was normalized to be 10 mW/cm².

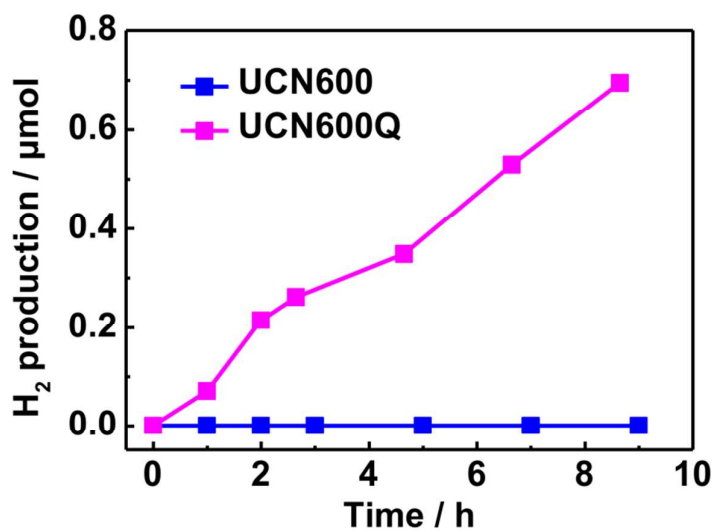


Figure S6. The comparison of photocatalytic hydrogen production activities between UCN600 and UCN600Q under monochromatic light irradiation of $\lambda = 550$ nm. The reaction was carried out in water containing 10 vol% triethanolamine with 6 wt% Pt loaded photocatalysts (20 mg).

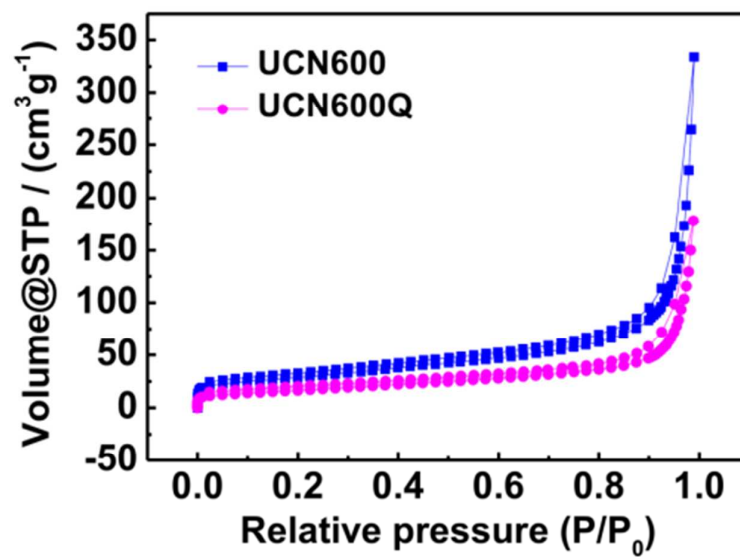


Figure S7. The isotherm nitrogen adsorption curves of UCN600 and UCN600Q.

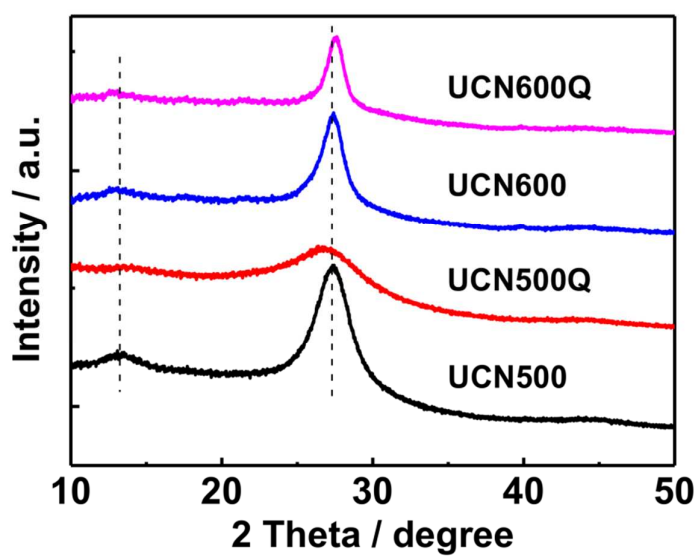


Figure S8. The XRD patterns of UCN500, UCN500Q, UCN600 and UCN600Q.

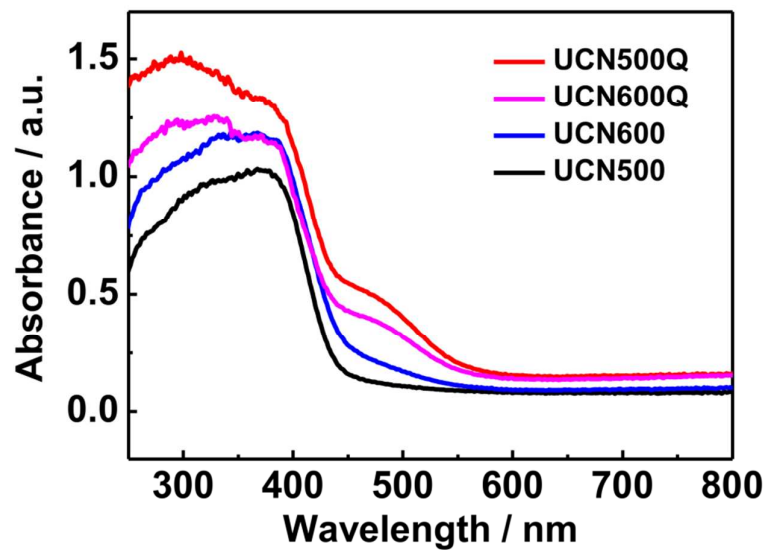


Figure S9. The UV-Vis absorption spectra of UCN500, UCN500Q, UCN600 and UCN600Q.

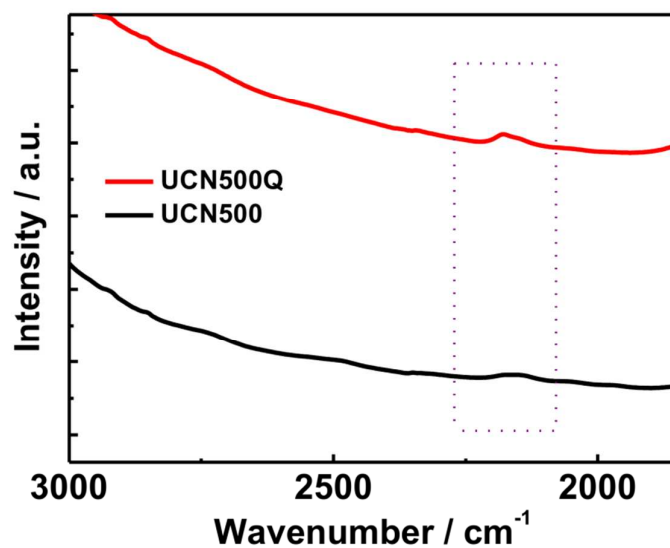


Figure S10. The FTIR spectra of UCN500 and UCN500Q in the region from 1850 cm^{-1} to 3000 cm^{-1} .

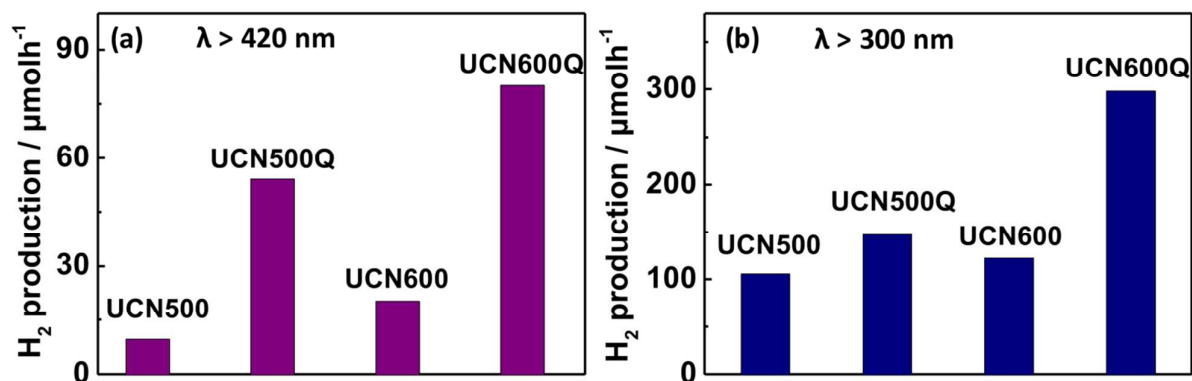


Figure S11. Hydrogen evolution activities of 6 wt% Pt loaded photocatalysts (20mg) in water containing 10 vol% triethanolamine under (a) visible light ($\lambda > 420 \text{ nm}$) and (b) full-arc ($\lambda > 300 \text{ nm}$) irradiation.

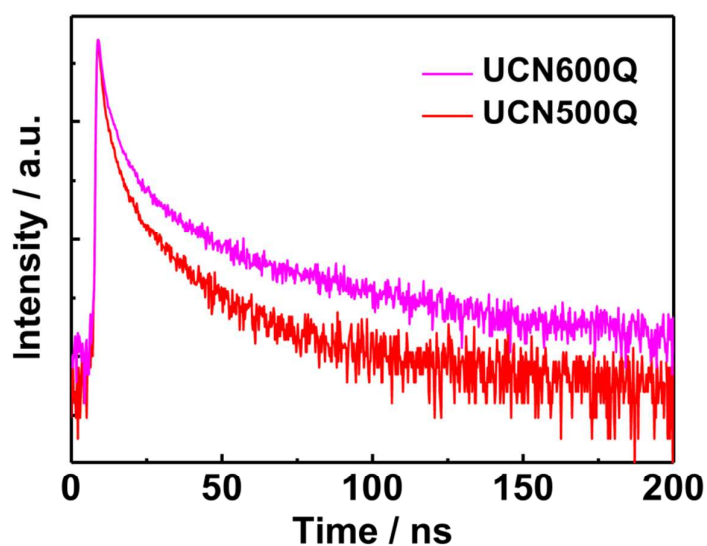


Figure S12. Time-resolved fluorescence decay spectra of UCN500Q and UCN600Q recorded at the photoluminescence emission peaks using incident light of 375 nm from picosecond pulsed light-emitting diode at room temperature.