Supplementary Material

Nitrogen doped Graphene/Graphitic Carbon Nitride with Enhanced Charge Separation and Two-Electrons-Transferring Reaction Activity for Boosting Photocatalytic Hydrogen Peroxide Production

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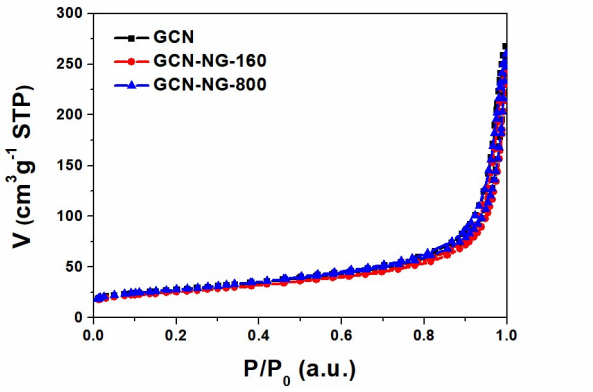

Figure S1. N_2 adsorption/desorption isotherms (77K) of GCN, GCN-NG-160 and GCN-NG-800 catalysts.

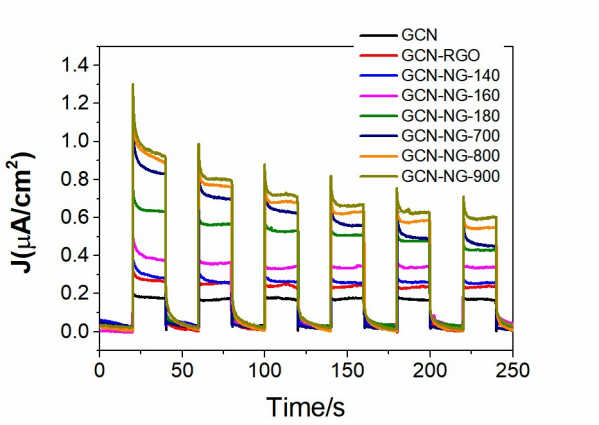

Figure S2. Photocurrent measurement of catalysts in 0.5 M Na_2SO_4 solution under 0.5 V (vs Ag/AgCl)

Table 1. Apparent quantum efficiency (AQE) at λ= 420 nm, 5h irradiation.

Catalysts	H_2O_2 Production	AQE
GCN	124.25μmol·g^{-1}	2.6%
GCN-NG-160	288.00μmol·g^{-1}	6.08%
GCN-NG-800	80.78μmol·g^{-1}	1.7%

The average intensity of light incident on the detector is 24.2 mW, and the radius of the light intensity detector is 1cm^2. The radius of the reactor is 2.5cm^2, the number of incident photons (N) is 5.75×10^{21} calculated by equation (1).

$$N = \frac{E\lambda}{hc} = \frac{2.5^2 \times 24.2 \times 10^{-3} \times 5 \times 3600 \times 420 \times 10^{-9}}{6.626 \times 10^{-34} \times 3 \times 10^{8}} = 5.75 \times 10^{21} \qquad (1)$$

GCN:

$$AQE = \frac{the\ number\ of\ reacted\ electrons}{the\ number\ of\ incident\ photons} \times 100\%$$

$$= \frac{2 \times 6.022 \times 10^{23} \times 124.28 \times 10^{-6}}{5.75 \times 10^{21}} = 2.6\%$$

GCN-NG-160:

$$AQE = \frac{the\ number\ of\ reacted\ electrons}{the\ number\ of\ incident\ photons} \times 100\%$$

$$= \frac{2 \times 6.022 \times 10^{23} \times 288 \times 10^{-6}}{5.75 \times 10^{21}} = 6.08\%$$

GCN-NG-800:

$$AQE = \frac{the\ number\ of\ reacted\ electrons}{the\ number\ of\ incident\ photons} \times 100\%$$

$$= \frac{2 \times 6.022 \times 10^{23} \times 80.78 \times 10^{-6}}{5.75 \times 10^{21}} = 1.7\%$$