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Efficient piezo-catalytic hydrogen peroxide production from water and oxygen over graphitic carbon nitride

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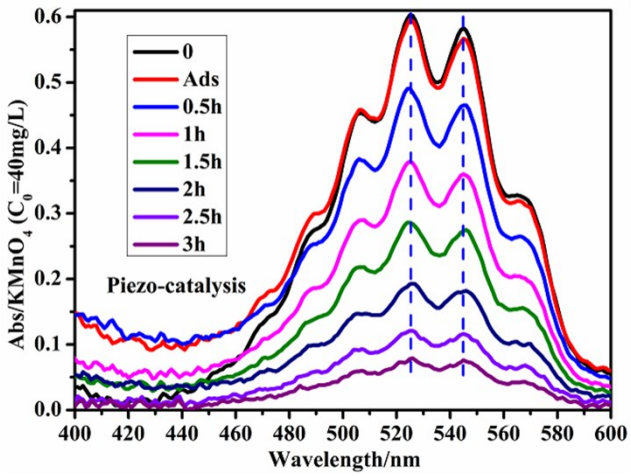

Fig. S1 The absorbance of $KMnO_4$ with different ultrasonic time in g-C_3N_4 suspension.

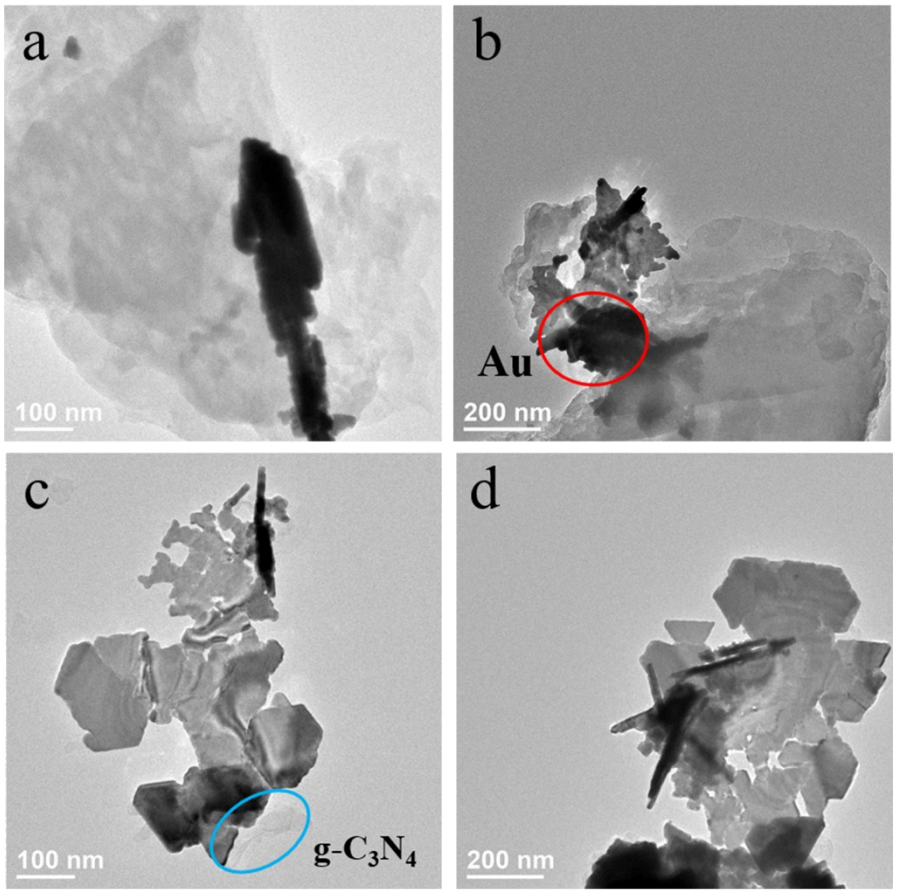

Fig. S2. TEM images of Au deposited g-C_3N_4 by (a, b) piezo-catalytic process (US-3) and by (c, d) photochemistry process (Xe-C_3N_4).

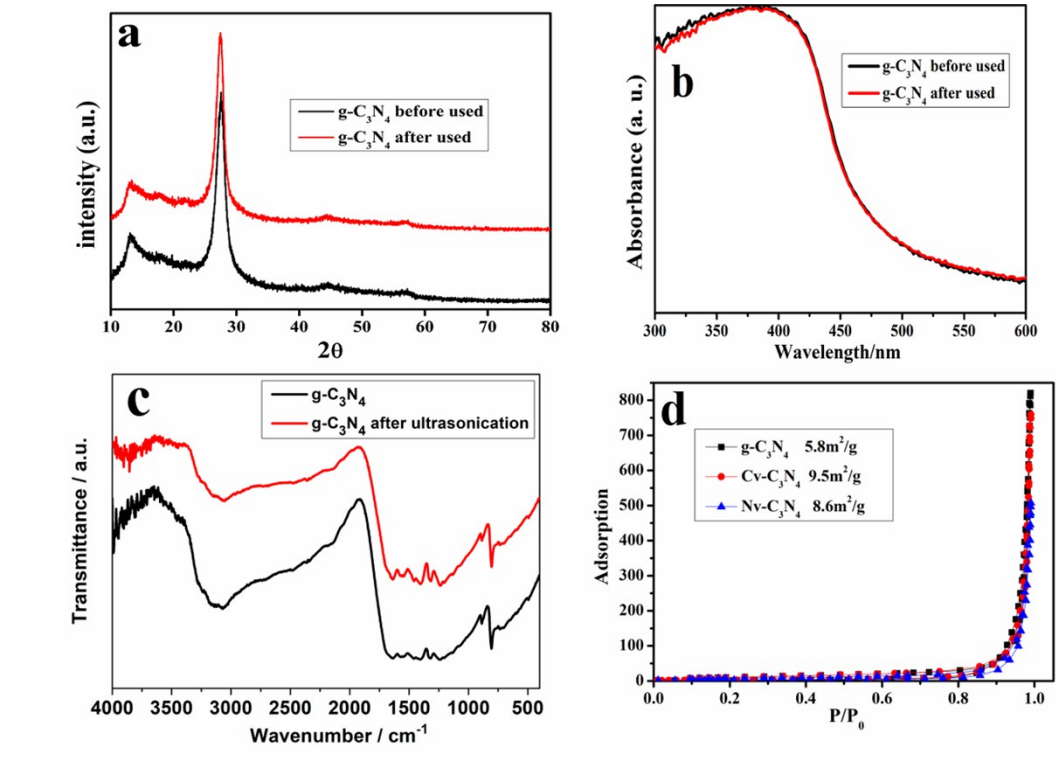

Fig. S3. (a) XRD, (b) DRS and (c) FTIR of g-C_3N_4 before and after used. (c) BET of pristine g-C_3N_4, Cv-C_3N_4 and Nv-C_3N_4.

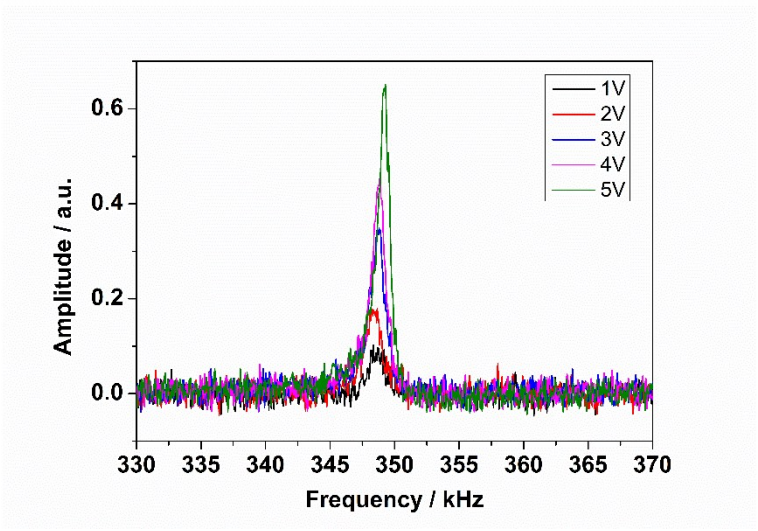

Fig. S4. PFM resonant responses of g-C_3N_4 for different applied voltages

Table S1. Summary of representative reports for generating H_2O_2 via solar-to-chemical process

Catalyst	Dosage of catalyst	Reaction solution	Light	Generating rate of H_2O_2 (μmol /h)	Ref.
TiO_2	5 mg	5 mL H_2O containing 0.2 mL EtOH	280−400 nm 13.8 mW/cm^2	2.5	**1**
Au-$BiVO_4$	50 mg	30 mL H_2O	Xe arc lamp (>300 nm)	0.12	**2**
g-C_3N_4/BDI	50 mg	30 mL H_2O	420−500 nm 131 m/cm^2	12.5	**3**
Pt-Bi_2WO_6	65 mg	50 mL H_2O containing 0.43 mM phenol	150W Xe light 25.2 mW/cm^2	0.5	**4**
g-C_3N_4/PDI	50 mg	30 mL H_2O	420−500 nm 131 mw/cm^2	1.04	**5**
K, P, O-C_3N_4	20 mg	40 mL H_2O containing 8 mL EtOH (pH=3, by $HClO_4$)	726.8 mW (>420nm) and 833 mW (>320nm)/cm^2	10	**6**
POM-C_3N_4	100 mg	100 mL H_2O	300W Xe light (>300nm)	3.5	**7**
CdS-RGO	50 mg	50 mL H_2O (pH=5, by H_2SO_4)	300W Xe light	0.58	**8**

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