

## SUPPORTING INFORMATION FOR

### Activation of Graphitic Carbon Nitride (g-C<sub>3</sub>N<sub>4</sub>) by Alkaline Hydrothermal Treatment for Photocatalytic NO Oxidation in Gas Phase

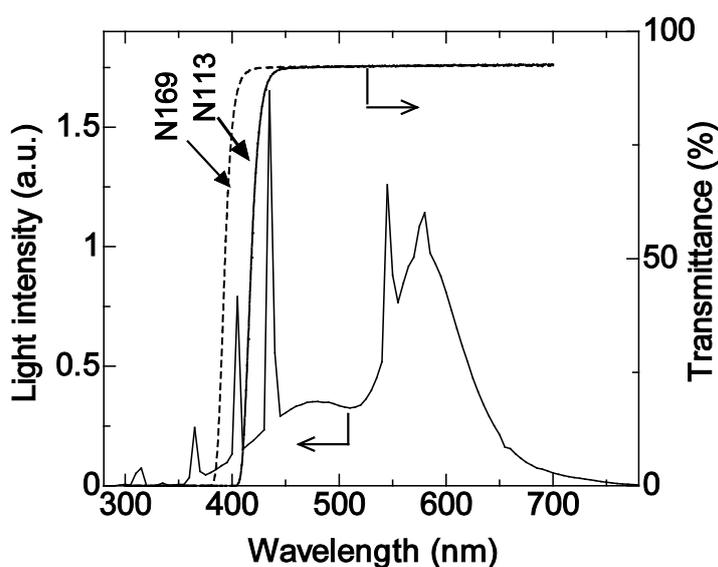
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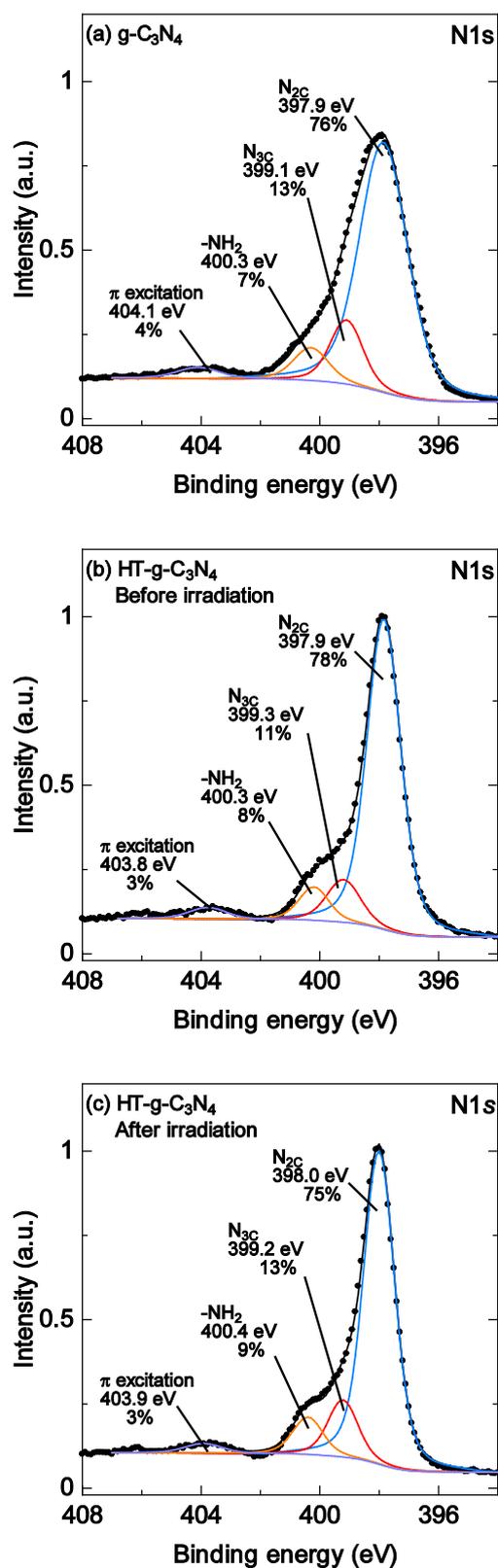
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**Table S1** The effect of hydrothermal treatment.

Solution	Temperature (°C)	Relative surface area (m <sup>2</sup> /g)	NO removal percentage (%)	NO removal activity per unit surface area (μmol m <sup>-2</sup> h <sup>-1</sup> )
none	–	7.7	3.9	0.064
NaOH (0.1M)	90	50.0	35.6	0.080
NaOH (0.1M)	110	56.0	34.2	0.068
NaOH (0.1M)	130	53.7	37.6	0.078
NaOH (0.1M)	150	65.0	31.6	0.054
NaOH(0.01M)	150	14.9	10.5	0.079
NaOH(0.5M)	130	68.1	19.6	0.032
KOH(0.07M)	110	10.8	6.0	0.062
Deionized water	150	13.1	4.0	0.034

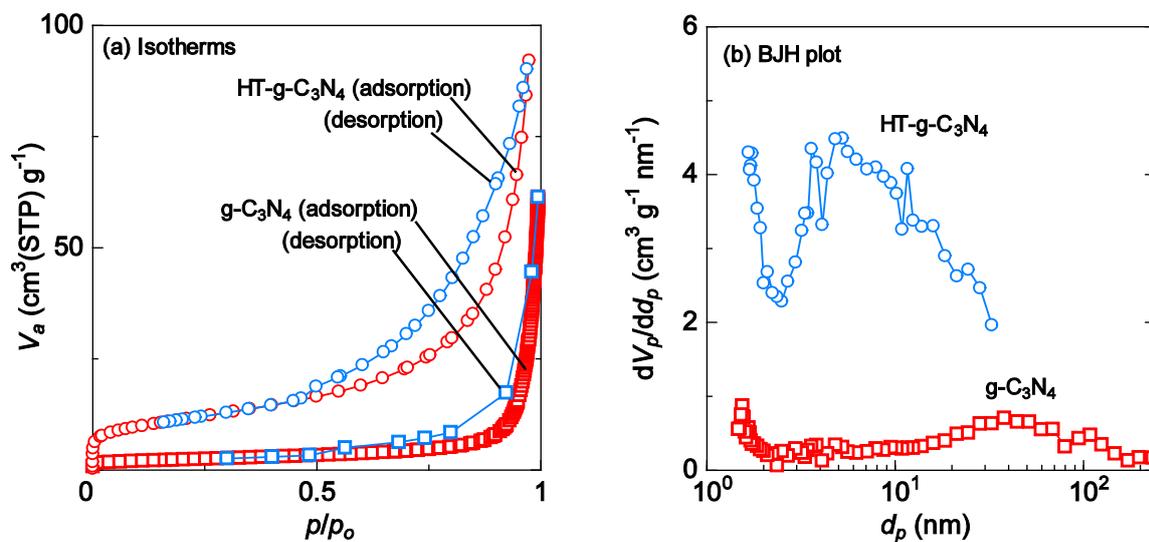


**Fig. S1** Spectrum of w-type fluorescent lamp used in the evaluation of NO<sub>x</sub> removal, and transmittance spectra of UV-cut filters (N169 and N113).

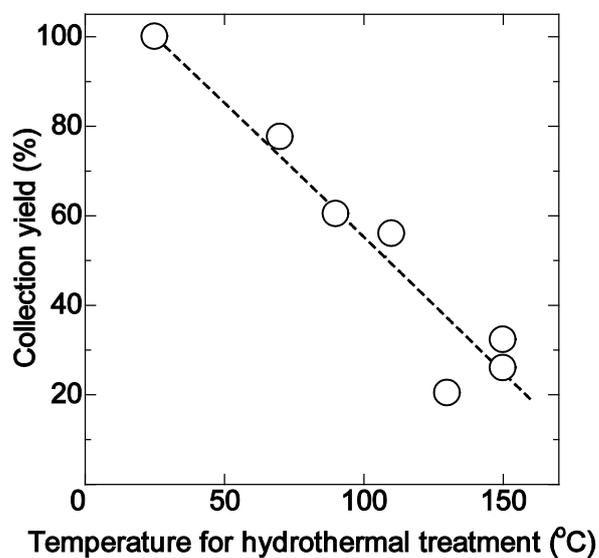


**Fig. S2** N1s XPS spectra of g-C<sub>3</sub>N<sub>4</sub> (a), HT-g-C<sub>3</sub>N<sub>4</sub> obtained by alkaline hydrothermal treatment at 90 °C (b), and HT-g-C<sub>3</sub>N<sub>4</sub> irradiated with UV light for 3 h (c). The peaks in the spectrum (a) were broadened because of charge-up. For the spectra (b) and (c), charge-up was reasonably inhibited. N<sub>2C</sub> and N<sub>3C</sub> denote two-coordinated and three-coordinated nitrogen atom of tri-s-triazine unit, respectively. It is supposed that a peak of the secondary amino group (-NH-) connecting two tri-s-triazine unit is overlapped

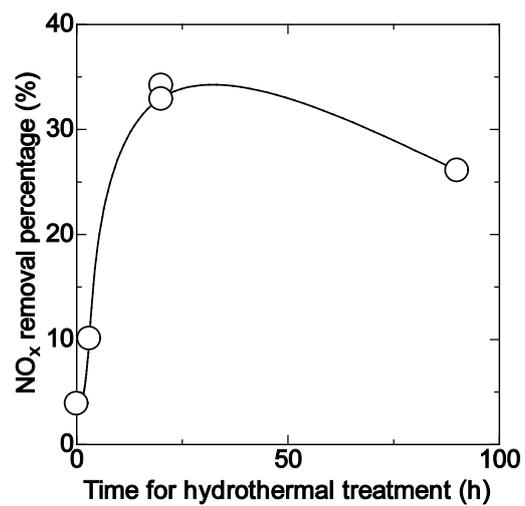
with the peaks of  $N_{3c}$  and/or  $-NH_2$ .



**Fig. S3** Nitrogen adsorption-desorption isotherms (a) and the corresponding pore size distribution curves (b) of  $g-C_3N_4$  and HT- $g-C_3N_4$  obtained at 90 °C. The pore size distribution was analyzed with BJH method.



**Fig. S4** Dependence of collection yield of HT- $g-C_3N_4$  on temperature for hydrothermal treatment.



**Fig. S5** Dependence of NO<sub>x</sub> removal percentage on time for alkaline hydrothermal treatment. The treatment temperature was 110 °C.