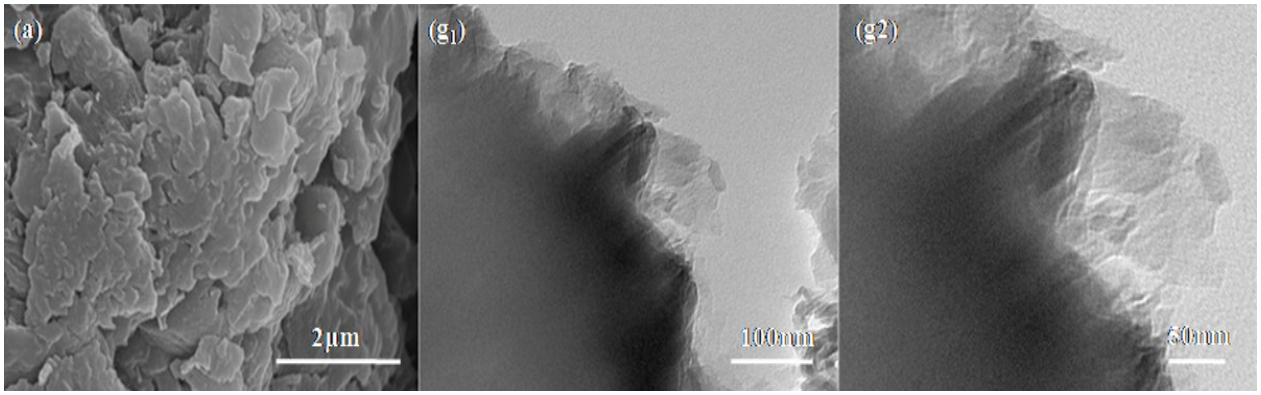
Supplementary Material

Fig. S1 SEM images and TEM images of as-synthesized bulk CN.

Fig. S2 Variations of NO conversion efficiency with irradiation time for control experiments with the absence of the CM+2.5mol%-T, visible-light irradiation, the H_2O_2 solution, both CM+2.5mol%-T and the H_2O_2 solution, respectively.

Fig. S3 The fitting line obtained by standard solutions by using Ion Chromatography.

Table S1 Results of nitrogen balance calculation from NO for the PCO with bulk CN and CM, CM+2.5mol%-T, CM+5mol%-T, CM+10mol%-T .



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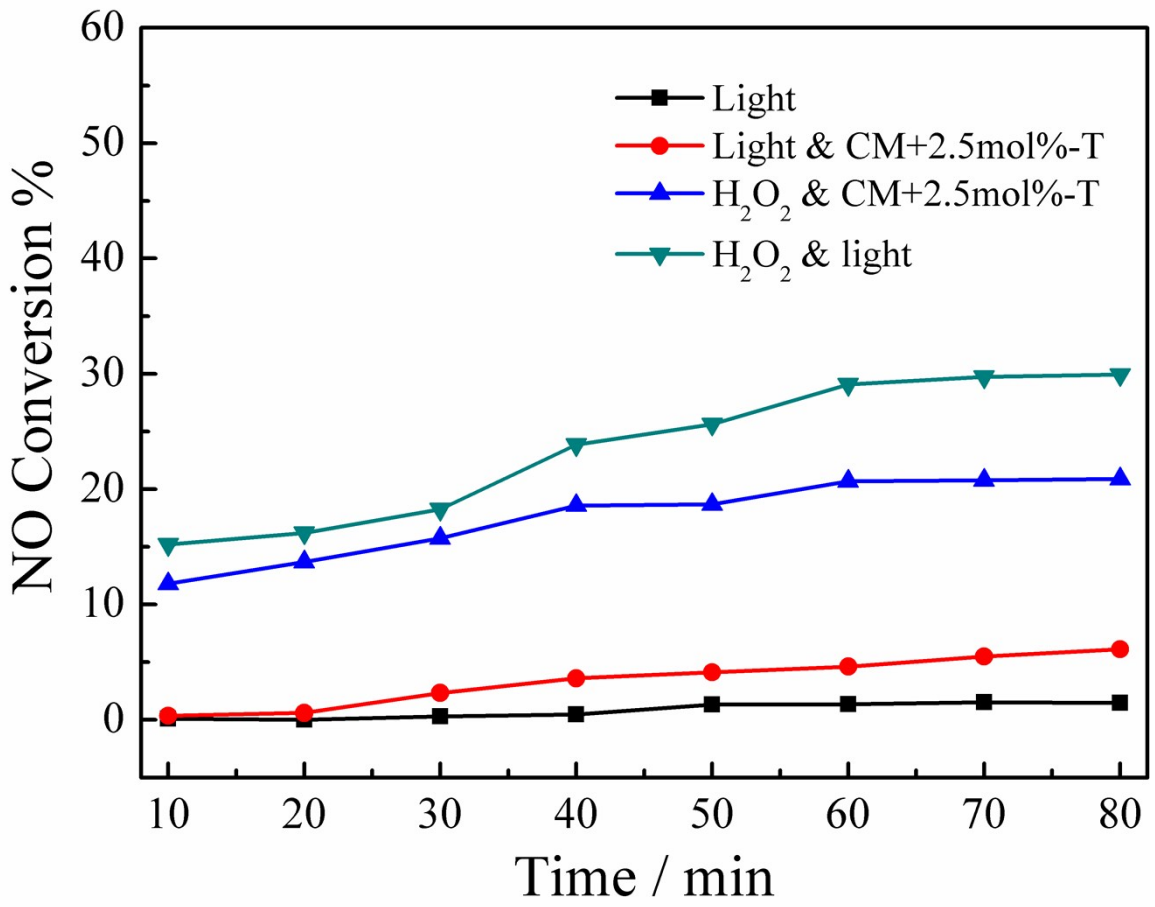

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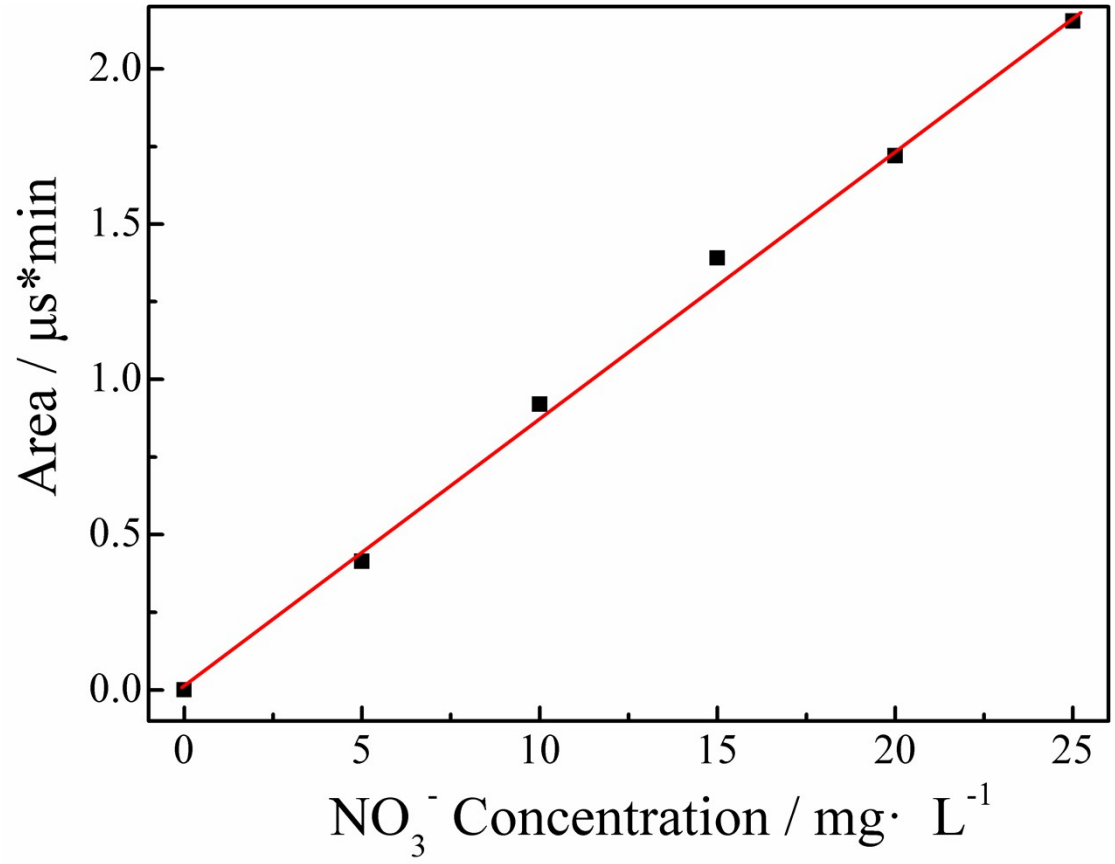

Fig. S3 The fitting line obtained by standard solutions using Ion Chromatography.

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Category	M	CM	CM+2.5mol%-T	CM+5mol%-T	CM+10mol%-T
Time t, min	80	80	80	80	80
Gas flow Q, mL·min^{-1}	100	100	100	100	100
Solution volume V_L, mL	8	8	8	8	8
$c_{NO,in}$, ppm	366	382.2	383.7	382.7	379.4
$c_{NO,out}$, ppm	163.6	67.6	25.7	51.7	63.7
NO conversion, %	55.3	82.3	93.3	86.5	83.2
c(NO_3^-) actual value, mg·L^{-1}	478.7	754.9	871.3	773.9	760.3
n(NO_3^-) actual value, mmol	0.062	0.097	0.112	0.100	0.098
n(NO_x^-) estimated value, mmol	0.066	0.103	0.117	0.108	0.103
n(NO_x^-) relative error, %	6.1	5.8	4.3	7.4	4.9
Average n(NO_x^-) relative error, %			5.7		

to investigate possible byproducts, the nitrogen balancing calculation is performed. The actual molar value of NO_3^- and the estimated molar value of NO could be calculated by Eq. (1) and Eq. (2) based on the material balance of N element from NO:

$$n(NO_3^-)_{act} = \frac{C(NO_3^-)\,V_L}{M_{NO_3}} \quad (1)$$

$$n(NO_x^-)_{\text{est}} = \frac{C_{in}\,\eta\,Q\quad t}{22.4} \times \frac{T_0}{T} \quad (2)$$

where $n(NO_3^-)_{act}$ is the actual molar value of NO_3^- and $n(NO_x^-)_{est}$ is the estimated molar value of NO; $c(NO_3^-)$ is the actual concentration of NO_3^- in the solution; V_L represents the volume of solution; M_{NO3-} is the molar mass of NO_3^-; C_{in} and η refer to inlet concentration of NO and conversion rate of NO, respectively; Q is the gas flow; t is the reaction time; T_0 is zero centigrade (273 K), while T is environmental temperature (298 K). From the computing result above, it can be seen that the estimated value and actual value of N element are in an order of magnitude. Also, the relative error between them is small. Therefore, the N element of NO which participated in the reaction was almost transferred into that of produced NO_3^-.