Supplement of

The Positive Effect of Formaldehyde on the Photocatalytic Renoxification of Nitrate on TiO_2 Particles

Yuhan Liu, Xuejiao Wang, Mengshuang Sheng, Chunxiang Ye, Jing Shang*

State Key Joint Laboratory of Environmental Simulation and Pollution Control, College of Environmental Sciences and Engineering, Peking University, 5 Yiheyuan Road, Beijing 100871, P. R. China

Correspondence to: shangjing@pku.edu.cn

The supporting information has 8 pages, 1 table, and 11 figure.

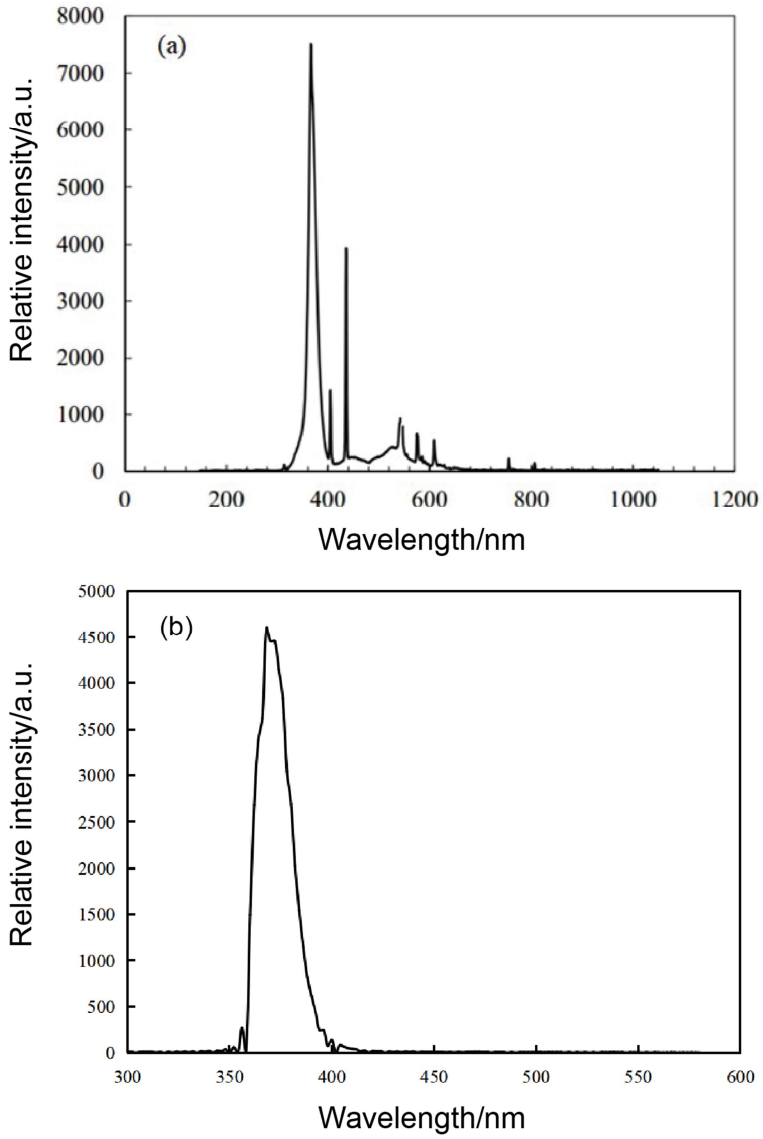

Figure S1. Spectral energy distribution of (a) 365 nm tube lamps and (b) 365 nm LED lamps.

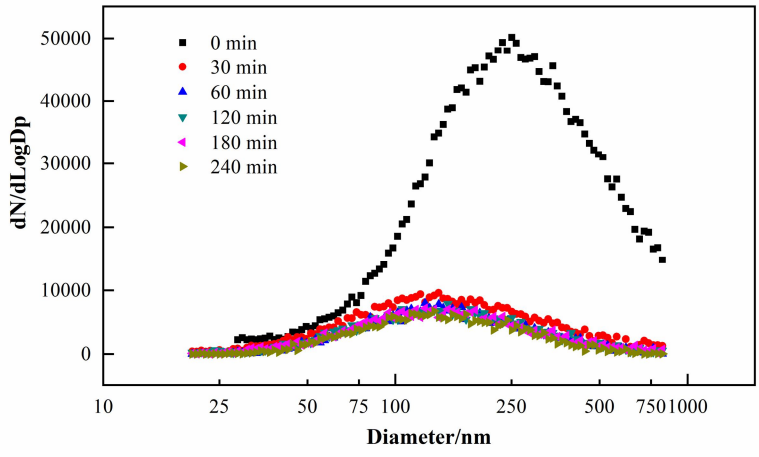

Figure S2. Changes of particle size distribution of TiO_2 particles in environmental chamber with

time.

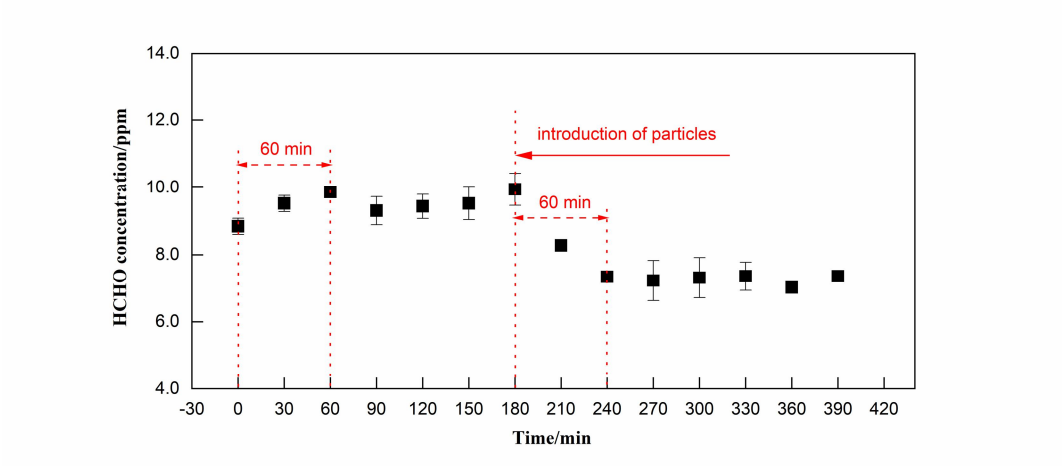

Figure S3. Changes of HCHO concentration in the environmental chamber before and after the introduction of particles over time.

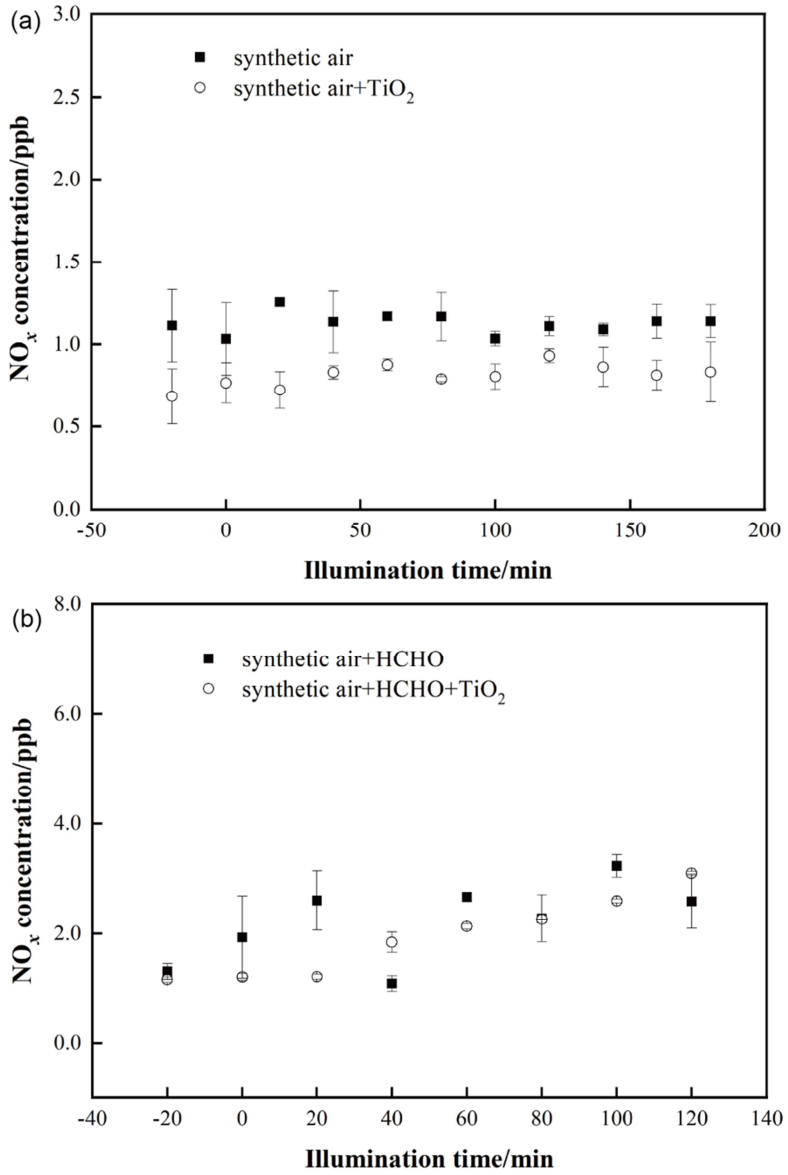

Figure S4. Changes of NO_x concentration in environmental chamber in (a) "synthetic air" and "synthetic air + TiO_2" system, (b) "synthetic air + HCHO" and "synthetic air + HCHO + TiO_2" system. 365 nm tube lamps were used during the blank experiment.

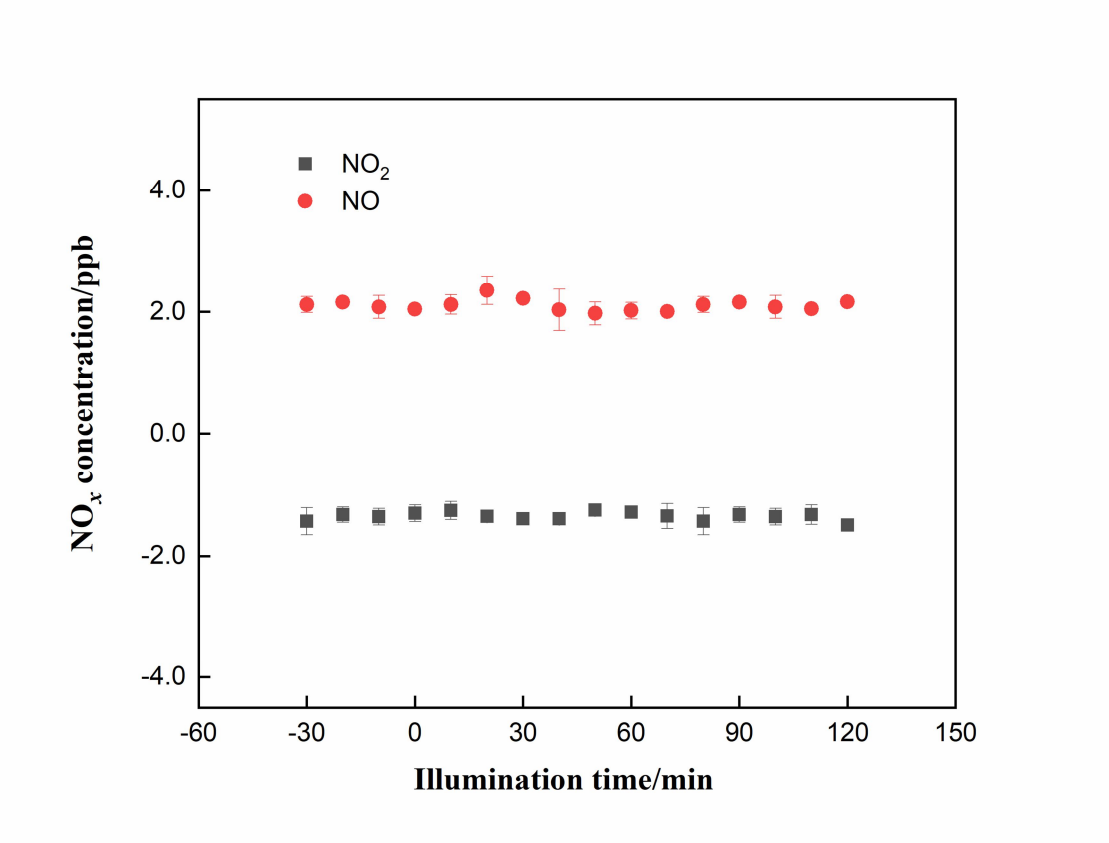

Figure S5. Effect of illumination on the release of NO and NO_2 over 4 wt.% KNO_3-TiO_2 at 293 K and 0.8% of relative humidity. 365 nm LED lamps were used during the illumination experiment.

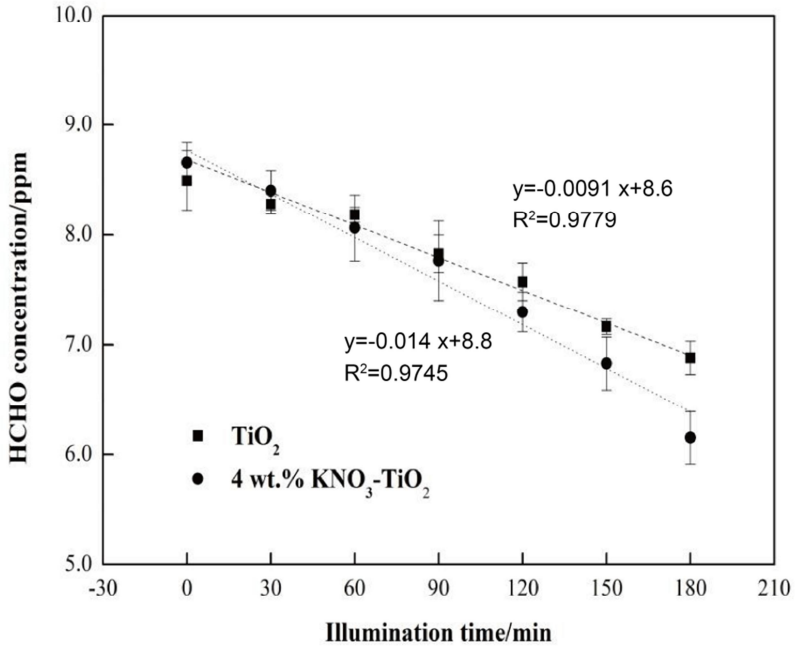

Figure S6. Photodegradation curve of HCHO on TiO_2 and 4 wt.% KNO_3-TiO_2 particles under 365 nm LED lamps at 293 K and 0.8% of relative humidity.

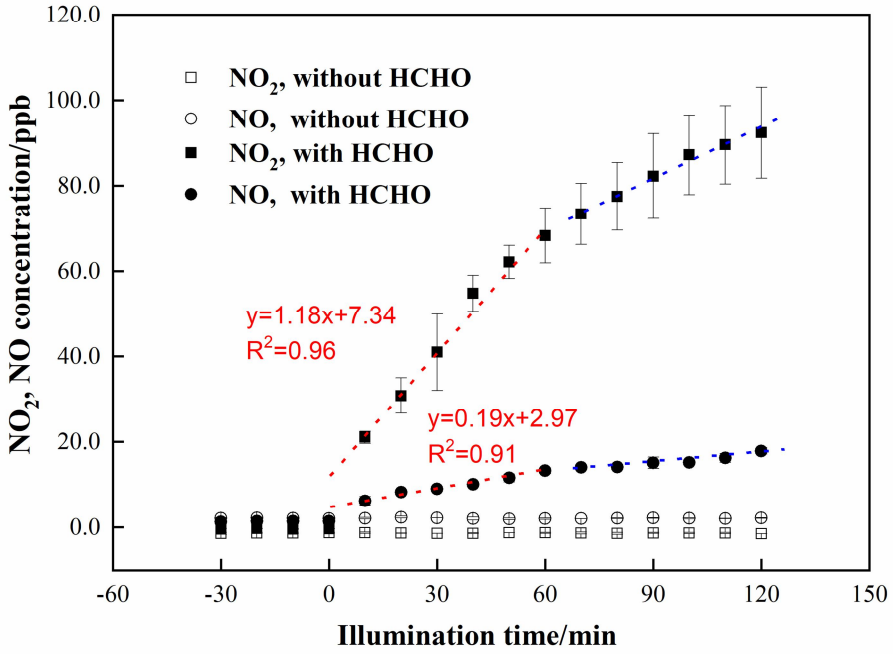

Figure S7. Effect of HCHO on the production of NO and NO_2 over 4 wt.% KNO_3-TiO_2 particles at 293 K and 0.8% of relative humidity. 365 nm LED lamps were used during the illumination experiment. The initial concentration of HCHO was about 9 ppm.

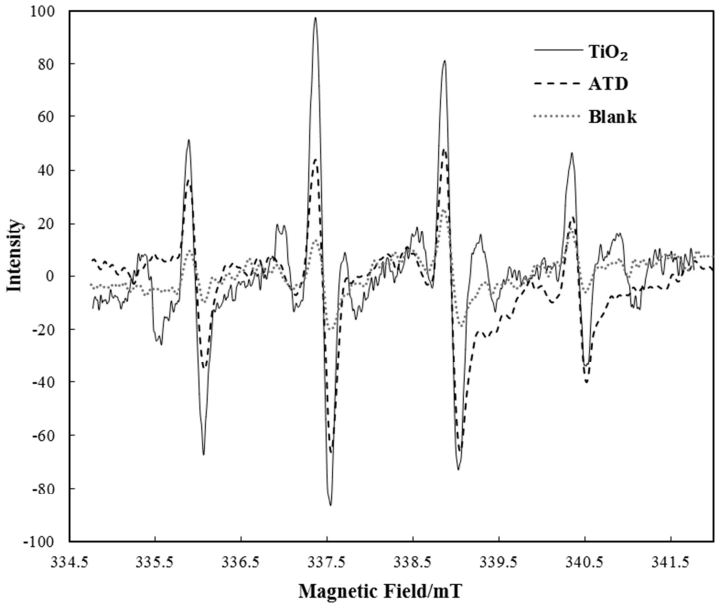

Figure S8. ESR spectra of irradiated TiO_2 and ATD particles.

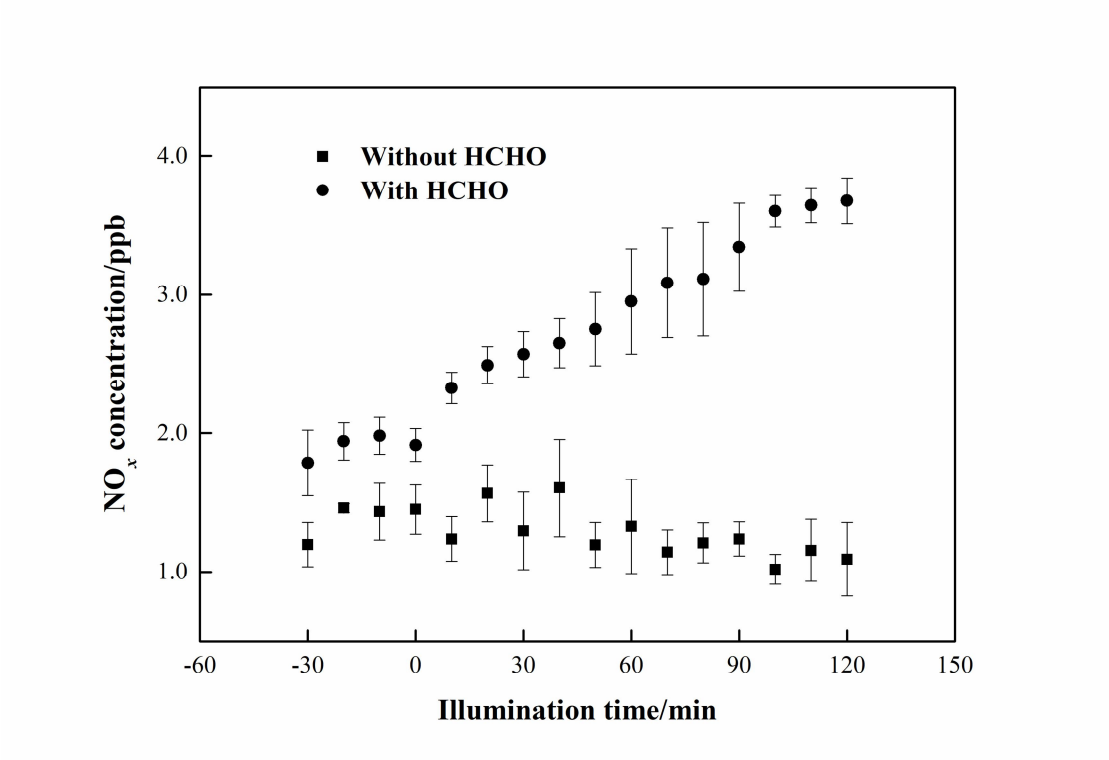

Figure S9. Effect of HCHO on the renoxification processes of Arizona Text Dust (ATD) at 293 K and 0.8% of relative humidity. 365 nm LED lamps were used during the illumination experiment. The initial concentration of HCHO was about 9 ppm.

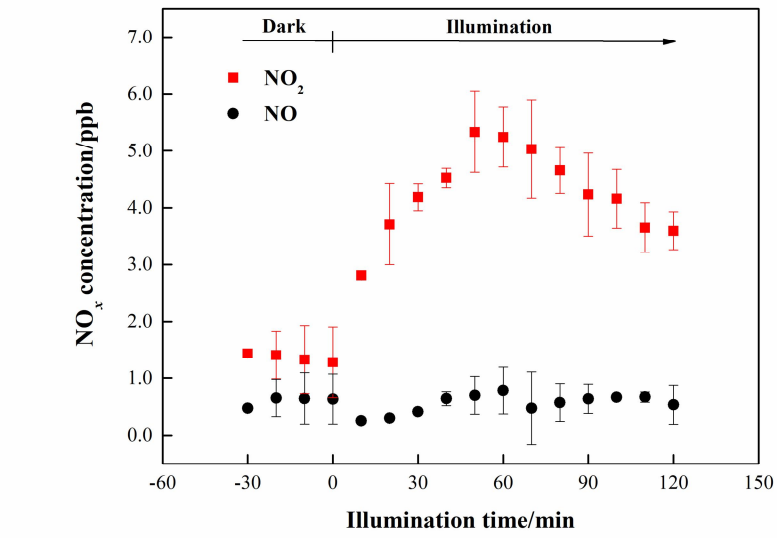

Figure S10. The release of NO_2 and NO with 365 nm LED lamps illumination over 4 wt.% KNO_3-TiO_2 particles at 293 K and 0.8% RH. The initial concentration of HCHO was about 1.0 ppm.

Table S1. Arizona Test Dust (ATD) chemical composition.

Chemical composition	Weight percentage (%)
SiO_2	68-76
Al_2O_3	10-15
Fe_2O_3	2.0-5.0
Na_2O	2.0-4.0
CaO	2.0-5.0
MgO	1.0-2.0
TiO_2	0.5-1.0
K_2O	2.0-5.0

*Loss on Ignition 2-5 %