Electronic Supplementary Material (ESI) for Environmental Science: Nano.


# Supporting Imformation

## Enhancement of photocatalytic NO removal activity of g-$C_3N_4$ by modification with illite particles

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**The trapping experiment**

Trapping experiment was used to investigate the NO removal mechanism in photocatalytic process. In NO removal experiments, potassium dichromate ($K_2Cr_2O_7$), potassium iodide (KI), p-benzoquinone (PBQ) and tert-butyl alcohol (TBA) were used as scavenger for electons ($e^-$), holes ($h^+$), superoxide free radicals ($\cdot O_2^-$) and hydroxyl radicals ($\cdot OH$), respectively. As shown in Fig. S1, both $K_2Cr_2O_7$ and KI could completely inhibit the NO removal activity of g-$C_3N_4$ and CN-$IL_5$, indicating both $e^-$ and $h^+$ are significant reactive species in the NO removal process. As for PBQ, it inhabited the activity of g-$C_3N_4$ and depressed part of activity of CN-$IL_5$, suggesting $\cdot O_2^-$ would affect both of g-$C_3N_4$ and CN-$IL_5$, however, which was more critical for CN. Adding TBA had weak influence in g-$C_3N_4$ system, while it reduced the activity of CN-$IL_5$ significantly, suggesting $\cdot OH$ was a crucial reactive species for CN-$IL_5$.

**Hydroxyl radicals production test**

Under aerobic conditions, Sodium terephthalate solution was applied as a fluorescent agent, and 50 mg of the sample was dispersed in 100 ml of fluorescent agent. Then the suspension was fully stirred for 10 min under dark conditions to reach adsorption equilibrium. After this process the beaker was illuminated under a xenon lamp equipped with a 420 nm filter, taking 4 ml of the suspension with a syringe every 10 min and filtering it through the filter membrane to obtain a clear solution. The clear solution was tested the fluorescence performance using 312 nm as the excitation light source with the scanning range of 330-600 nm.

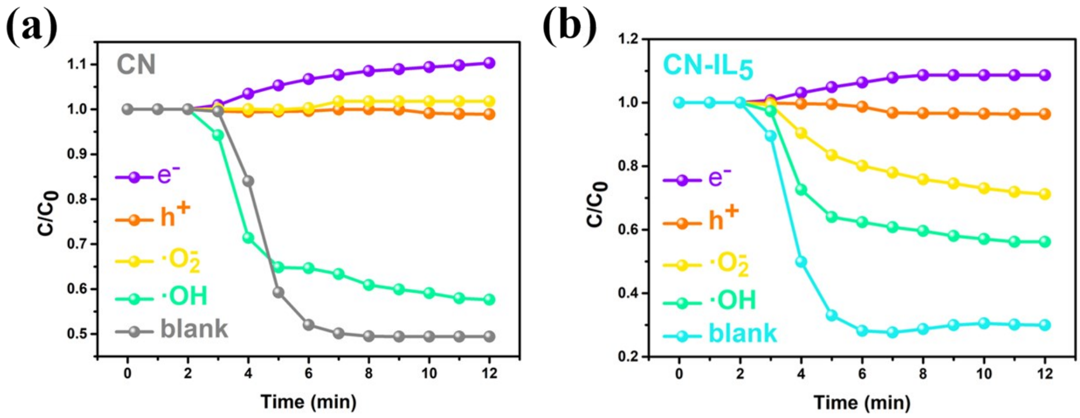


**Fig. S1** Trapping experiments for (a) g-$C_3N_4$; (b) CN-$IL_5$.

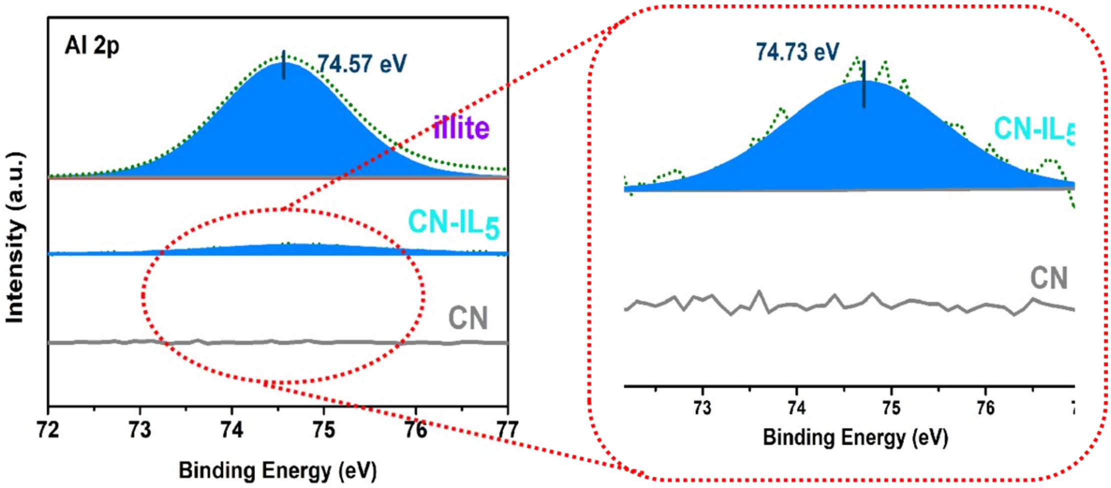


**Fig. S2** Al 2p and its enlarged spectra.

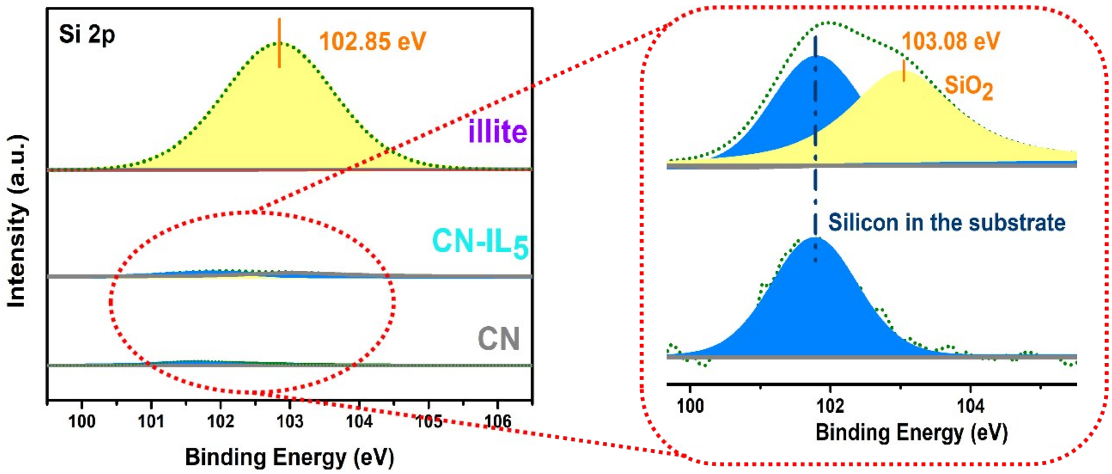


**Fig. S3** Si 2p and its enlarged spectra.

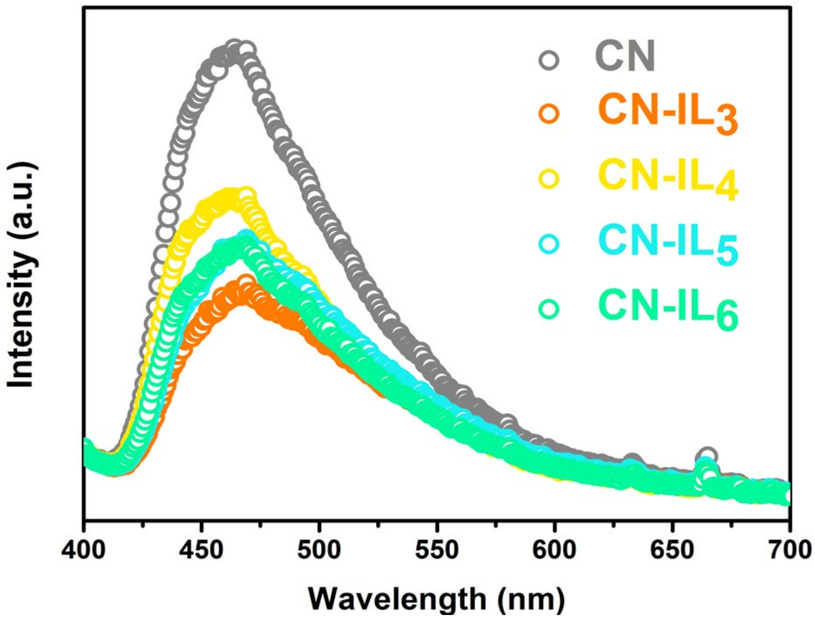


**Fig. S4** Fluorescence emission spectra of all samples.

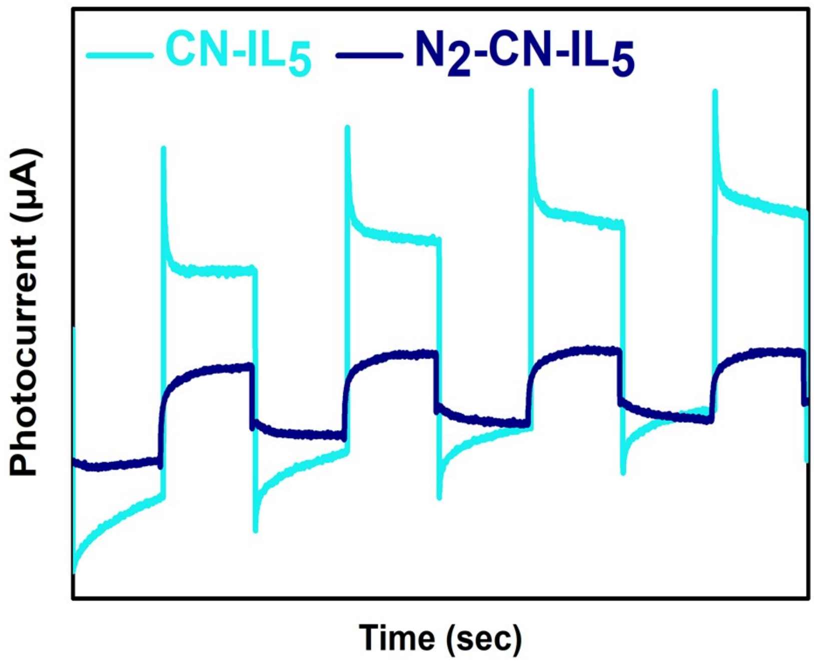


**Fig. S5** Photocurrent of CN-$IL_5$ in the argon atmosphere.

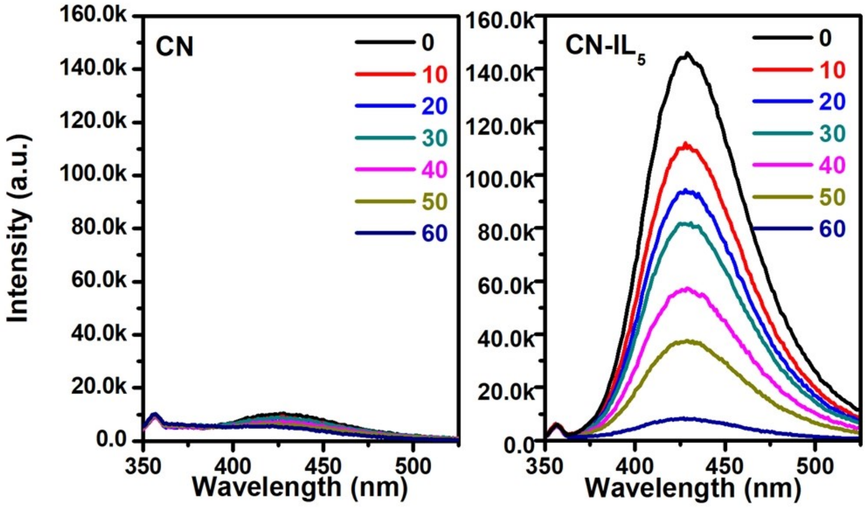


**Fig. S6** The generated ·OH in CN and CN-IL systems.

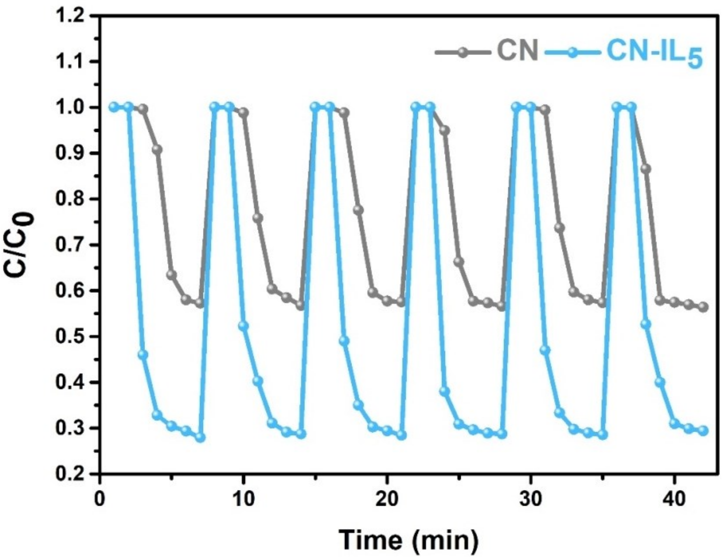


**Fig. S7** The stability of CN and CN-IL5 samples.