Support information

Facile Synthesis of Few-layer-thick Carbon Nitrides Nanosheets by Liquid Ammonia-Assisted Lithiation Method and their Photocatalytic Redox Properties

Ying Yin,[a] Jiecai Han,[a] Xinghong Zhang,[a] Yumin Zhang,[a] Jigang Zhou,[c] David Muir,[c] Ronny Sutarto,[c] Zhihua Zhang,[d] Shengwei Liu [e,] and Bo Song [a, b,*]*

[a] *Center for Composite Materials, Harbin Institute of Technology, Harbin 150080, China;*

[b] *Academy of Fundamental and Interdisciplinary Sciences, Harbin Institute of Technology, Harbin 150080, China;*

[c] *Canadian Light Source Inc., Saskatoon, Saskatchewan S7N 0X4, Canada;*

[d] *Liaoning Key Materials Laboratory for Railway, School of Materials Science and Engineering, Dalian Jiaotong University, Dalian 116028, China;*

[e] *State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan 430070, China;*

To whom correspondence should be addressed Electronic mail: songbo@hit.edu.cn, sliu@whut.edu.cn

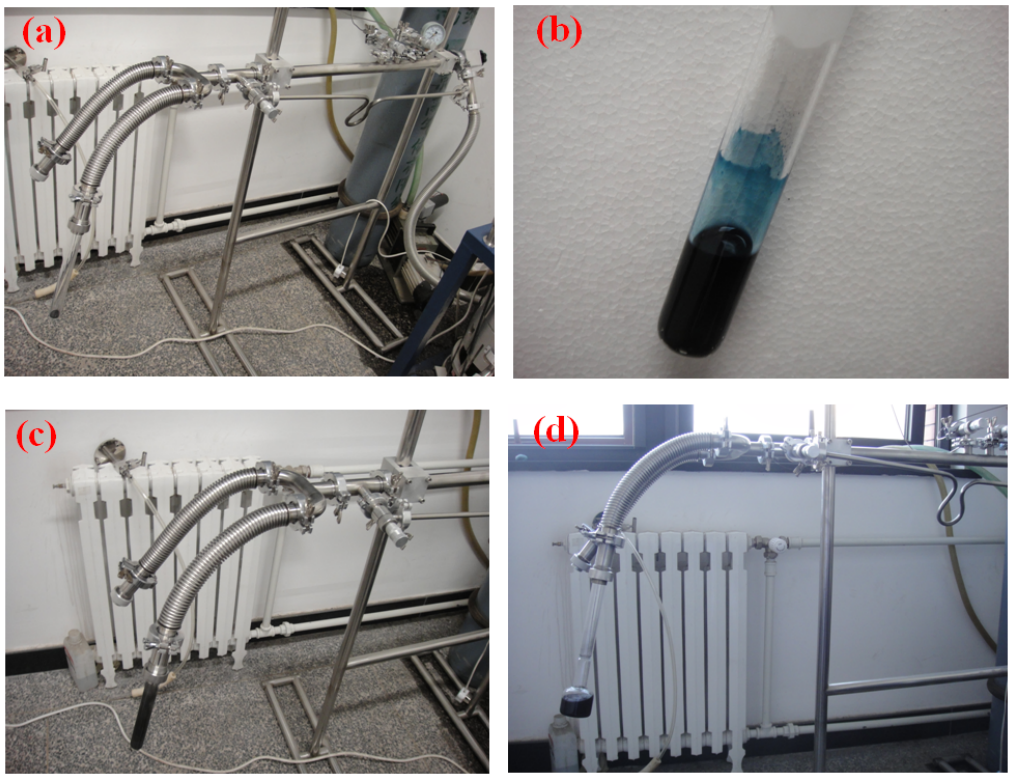

Figure S1(a) Photograph of the equipment and silica tube containing MoS_2 micropowder before reaction. (b) Photograph of silica tube containing MoS_2 micropowder during the reaction. (c) Photograph of silica tube containing MoS_2 micropowder after the reaction. (d) Photograph of a large silica tube containing MoS_2 micropowder during the reaction.

Figure S2 Photograph of dispersion of g-C_3N_4 NSs after being stored for one month under ambient conditions. There is no precipitation and g-C_3N_4 NSs show a good dispersion in DI water, suggesting a well stability of NSs as photocatalyst.

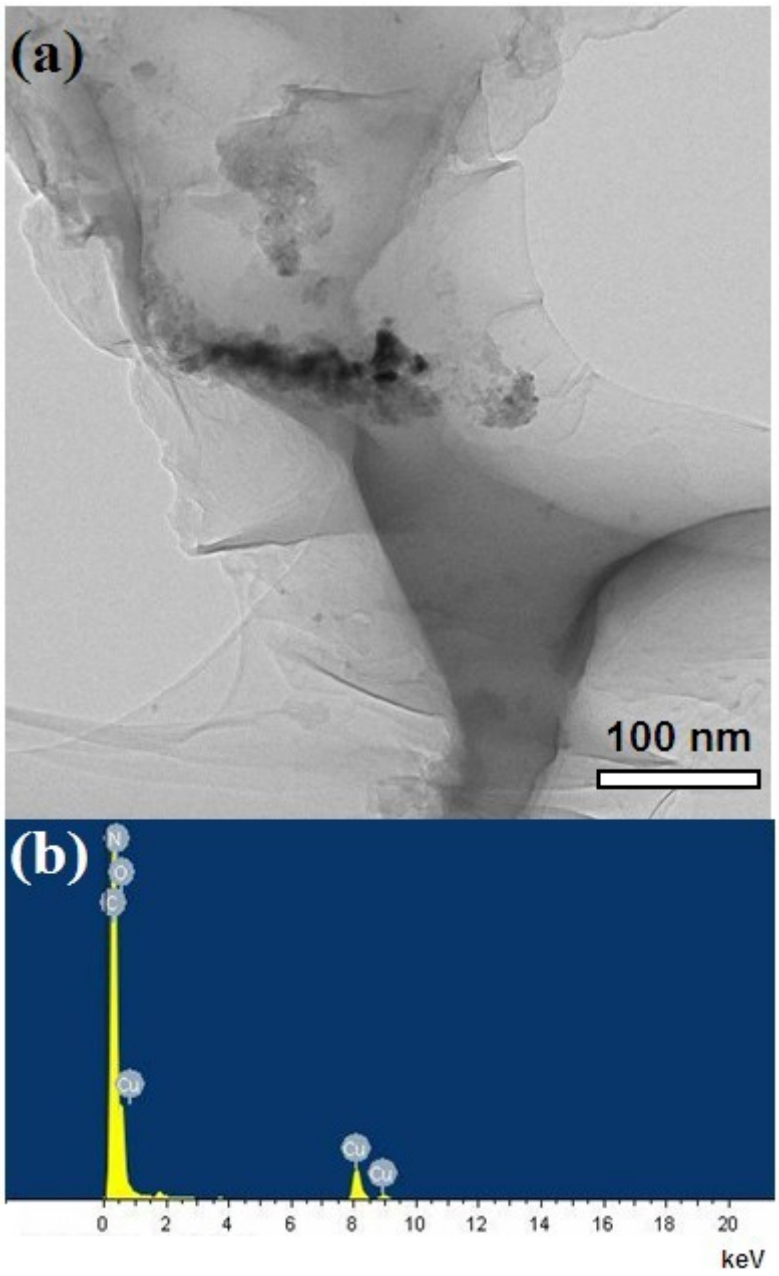

Figure S3 (a) TEM images and (b) the energy-dispersive spectroscope (EDS) spectrum of the as-exfoliated g-C_3N_4 NSs deposited on the Cu foil.

The TEM images shows the ultrathin feature of g-C_3N_4 NSs, and the EDS spectrum demonstrates that g-C_3N_4 NSs are mainly composed of C and N elements with no residual Li elements was detected. The O element originates from O_2 absorbance on the surface of the as-prepared g-C_3N_4 NSs.

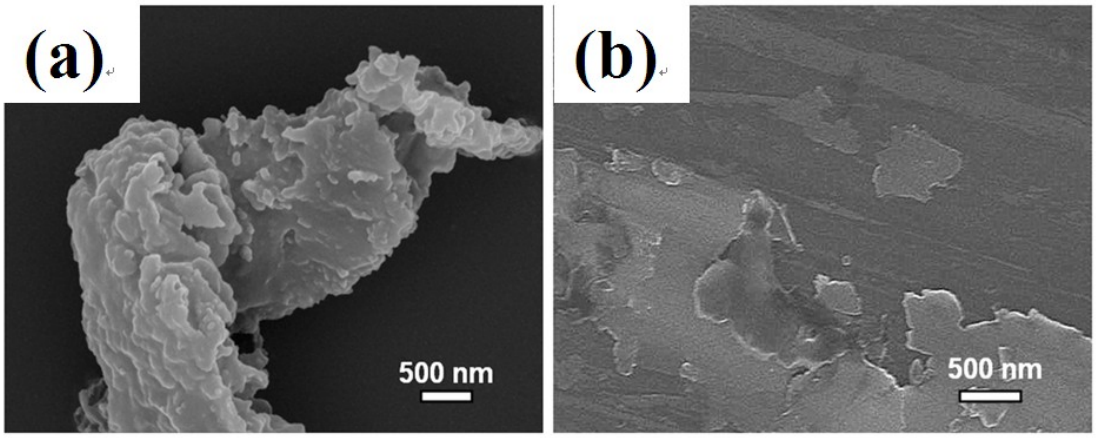

Figure S4 SEM images of (a) bulk g-C_3N_4 and (b) g-C_3N_4 NSs.

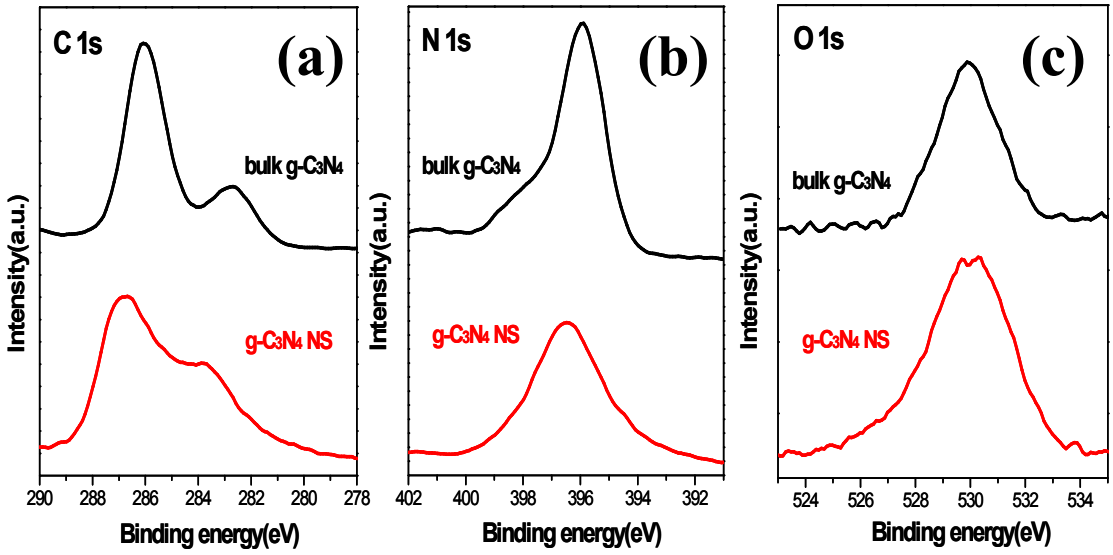

Figure S5 C1s (a) N1s (b) and O1s (c) XPS spectra of bulk g-C_3N_4 , and g-C_3N_4 NSs.

The peak of C 1s at 283.5 eV arises from the adventitious carbon in the samples.

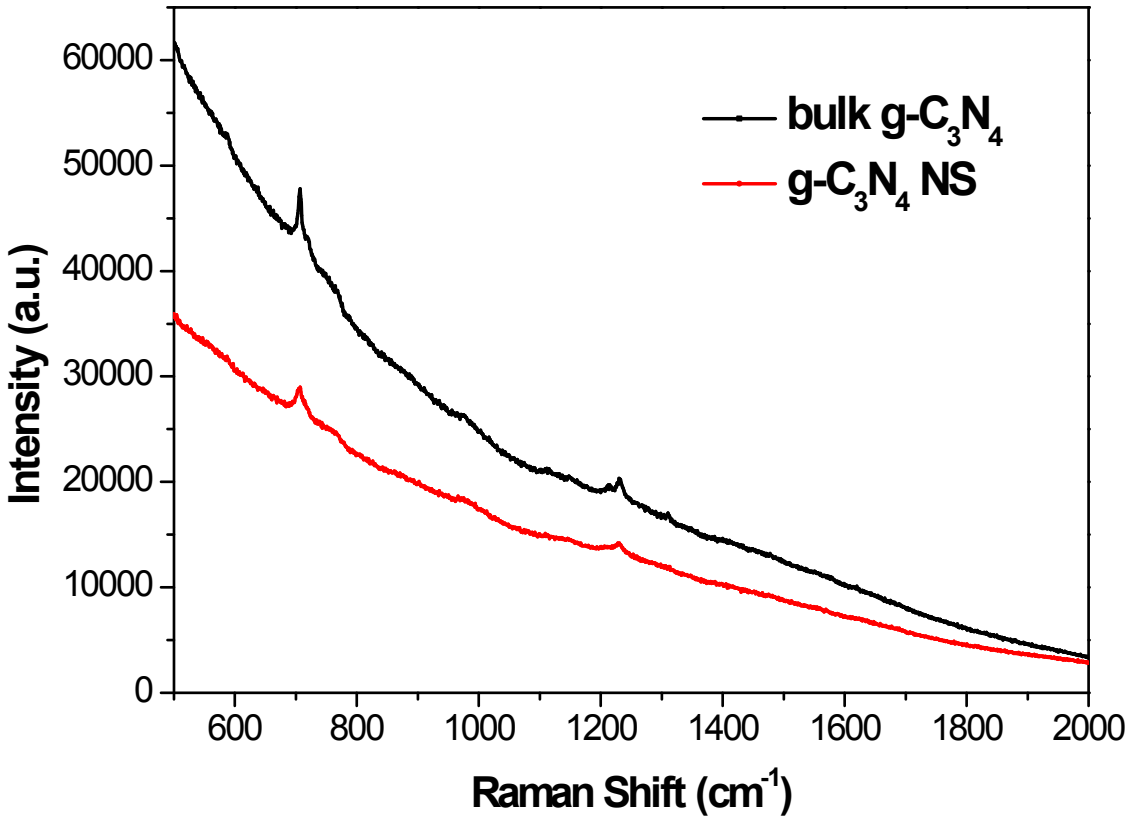

Figure S6 Raman spectra of the bulk g-C_3N_4 C_3N_4 and C_3N_4 NSs.

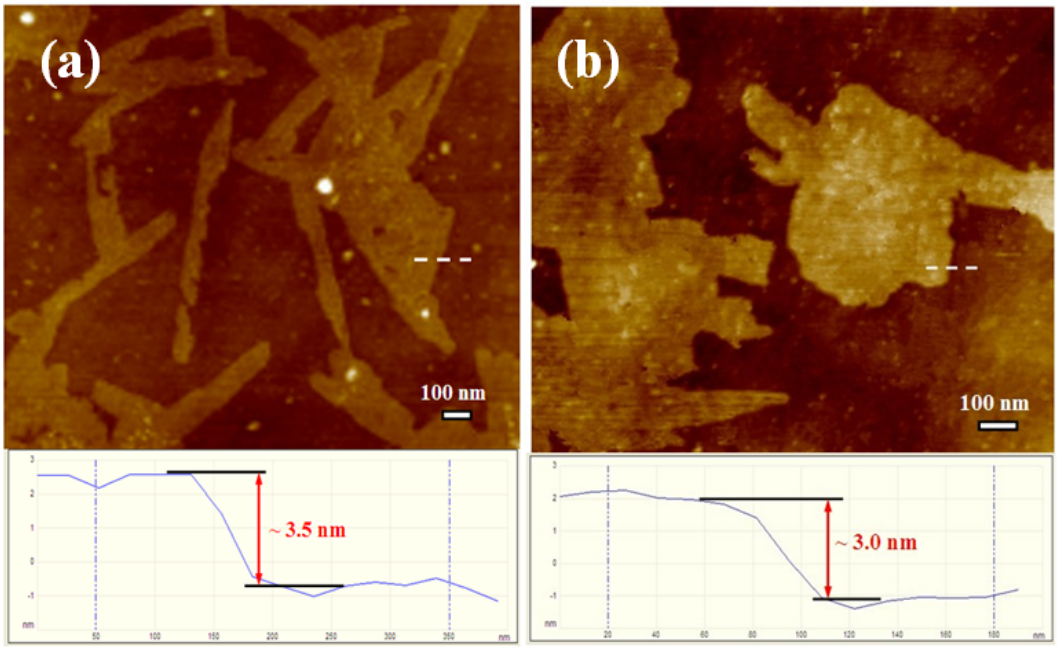

Figure S7 AFM measurement of (a) typical MoS_2 NSs and (b) WS_2 NSs deposited on Si substrates.

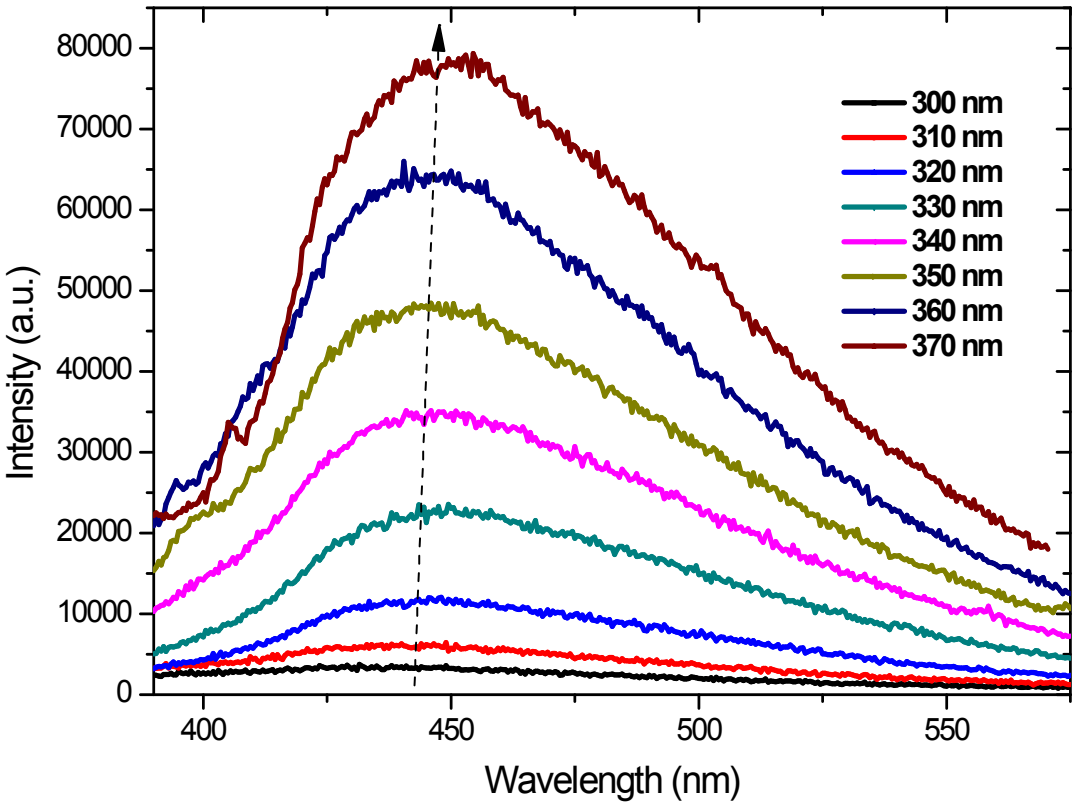

Figure S8 PL spectra of ultrathin g-C_3N_4 NSs aqueous solution excited at a range of wavelength. It can be seen that the PL spectra show negligible red shift with the increase of excited wavelength all located at blue light region.

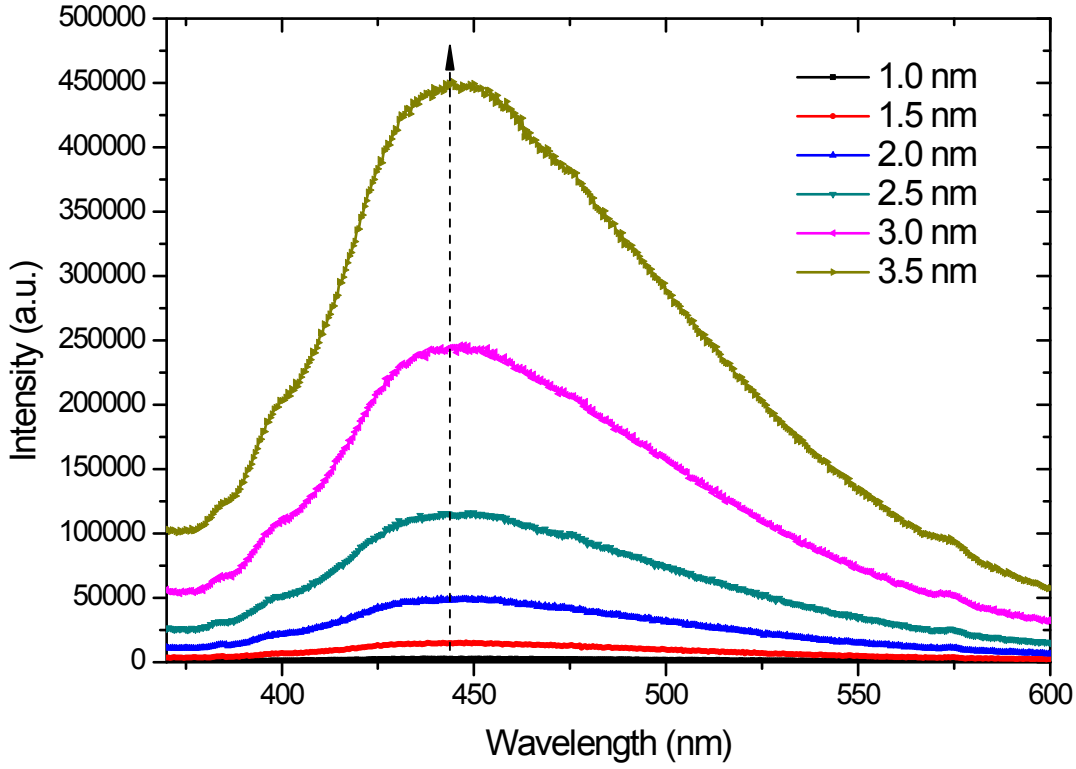

Figure S9 PL spectra of ultrathin g-C_3N_4 NSs aqueous solution excited at 340 nm with different excitation intensity through tuning the slide width of fluorescence spectrometer from 1.0 nm to 3.5 nm. It is demonstrated that the peaks of PL spectra remain at ~ 431 nm, but the intensity of PL peak increases with the increasing excitation intensity.

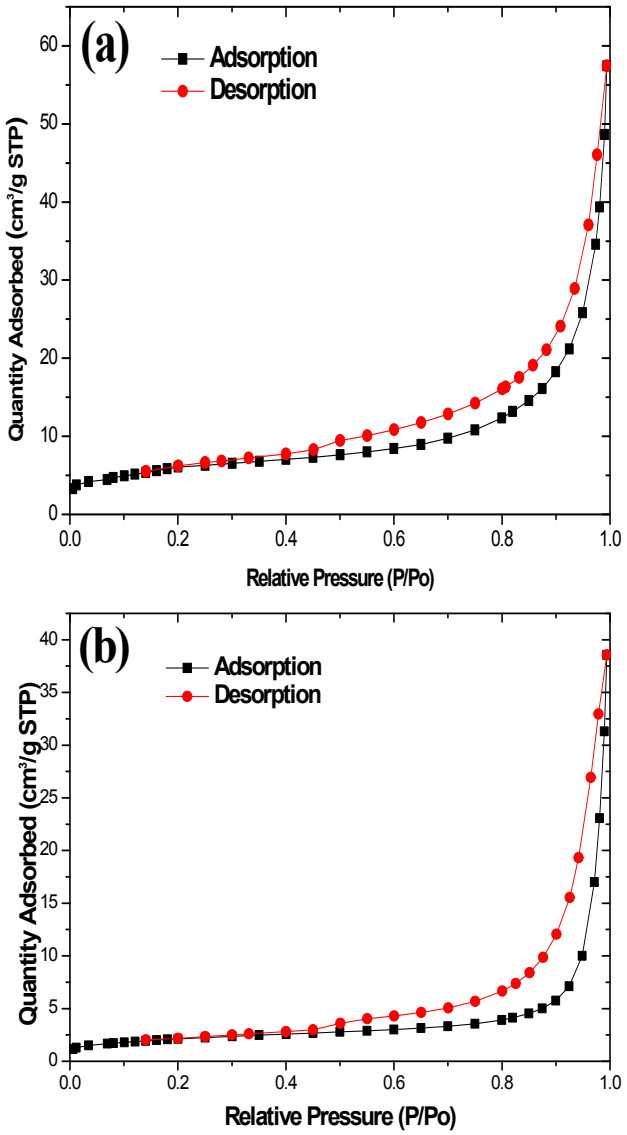

Figure S10 N_2 adsorption-desorption isotherm of (a) g-C_3N_4 NSs and (b) bulk g-C_3N_4.

The specific surface area of NS was 22.5 m^2/g, whereas the bulk materials has a surface area of only 7.72 m^2/g.

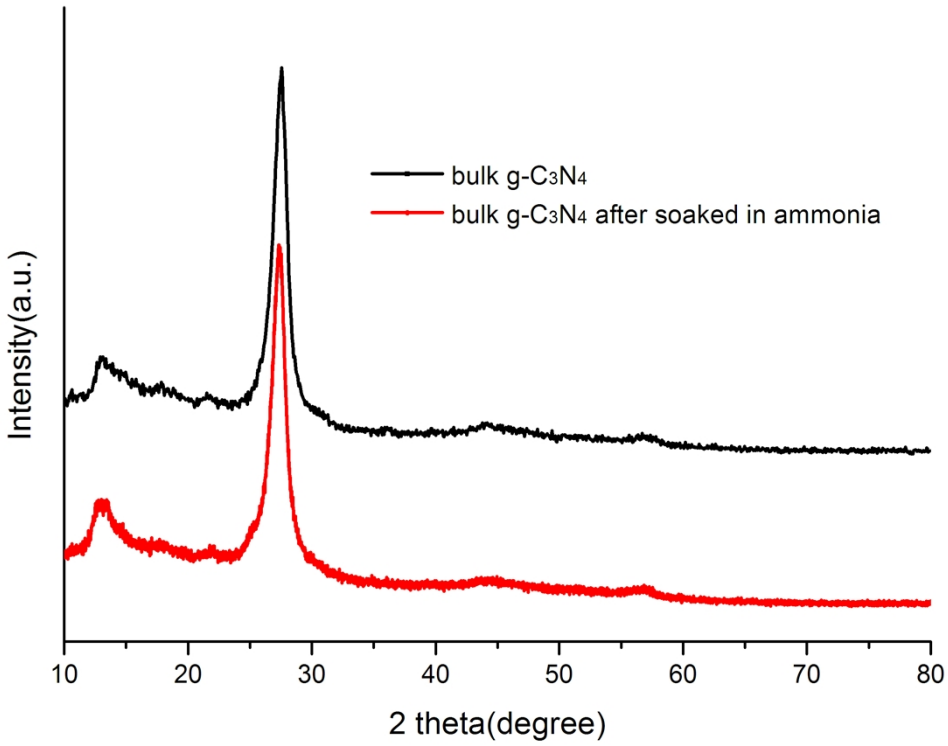

Figure S11 XRD patterns of bulk g-C_3N_4 before and after soaked in liquid ammonia.

Table S1 Element composition before and after the liquid ammonia-assisted lithium intercalation.

	N(%)	C(%)	H(%)
Bulk g-C_3N_4	62.47	35.36	1.638
g-C_3N_4 NS	60.90	34.48	1.657

REFERENCES

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