Supporting Information

**Facile synthesis of cadmium doped graphite carbon nitride for photocatalytic degradation of tetracycline under visible light irradiation**

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**Table S1** Cadmium chloride contents in carbon nitride material samples.

|  |  |
| --- | --- |
| Samples | CdCl2（*wt. %*） |
| g-C3N4 | 0.00 |
| 5-Cd-g-C3N4 | 0.05 |
| 10-Cd-g-C3N4 | 0.10 |
| 15-Cd-g-C3N4 | 0.15 |

**Table S2** The proportion of each element in the 10-Cd-g-C3N4 material.

|  |  |  |
| --- | --- | --- |
| Elements | Weight ratio% | Atomic percentage |
| C K | 25.73 | 32.09 |
| N K | 61.98 | 66.28 |
| Cd L | 12.28 | 1.64 |

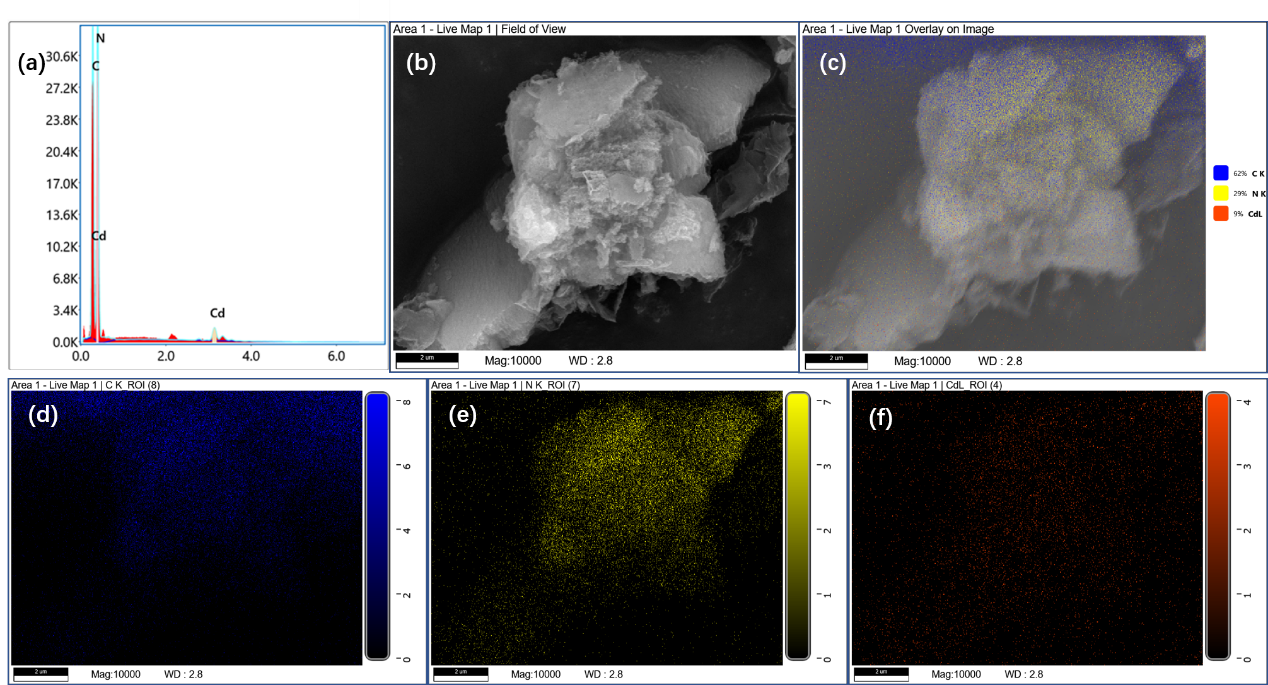
Table S2 illustrated the elements weight ratio of 10-Cd-g-C3N4 sample, where elements C was 25.73%, N was 61.98% and Cd was 12.28%. The atomic concentrations of Cd in the 10-Cd-g-C3N4 sample are 1.64%, which confirmed the cadmium doped in the g-C3N4 with a slight atomic ratio.

**Table S3** Surface area, pore volume and pore size parameters for pure g-C3N4 and 10-Cd-g-C3N4.

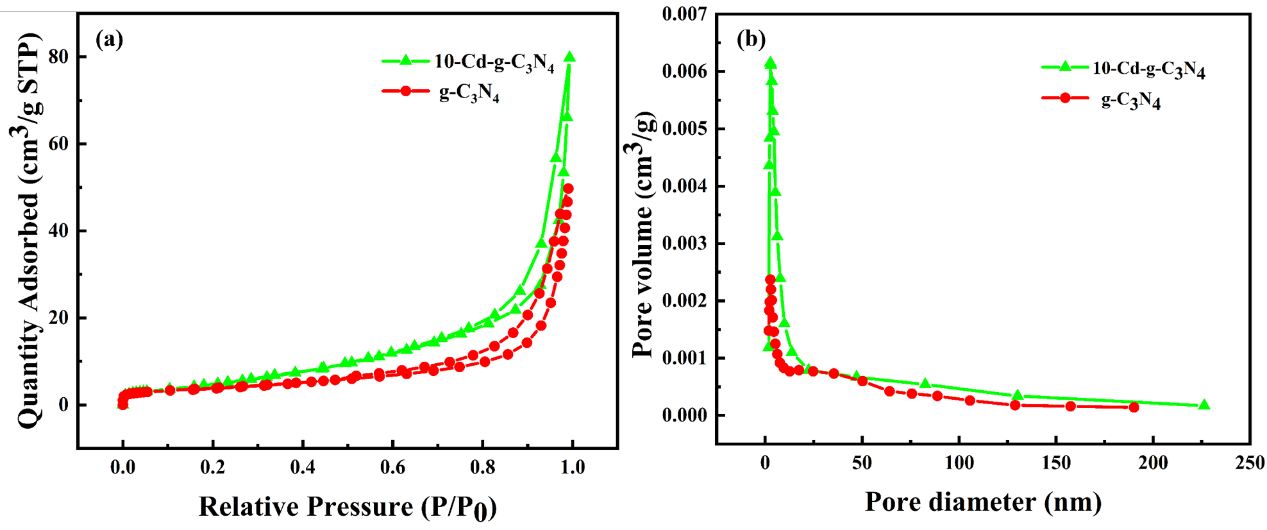
|  |  |  |  |
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| Samples | Surface area1 (m2 /g) | Pore volume2 (cm3 /g) | Pore size3 (nm) |
| g-C3N4 | 13.467 | 0.077 | 22.131 |
| 10-Cd-g-C3N4 | 16.460 | 0.123 | 25.917 |

**Table S4** The comparison with other similar types research of this work.

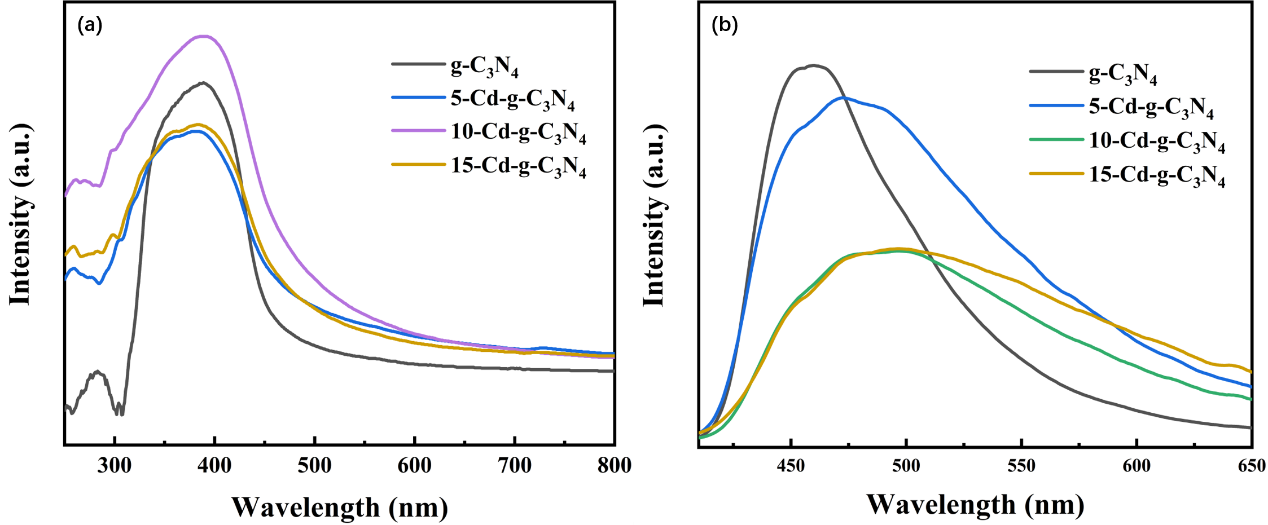
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| --- | --- | --- | --- |
| Samples | Experimental conditions | Degradation rate | Reference |
| Bi-g-C3N4 | [TC]0 =20 mg/L  [Catalyst]0=0.2 g/L  300 W Xe lamp | 94.1% in 50 min | (Wang et al. 2019) |
| K-g-C3N4 | [TC]0 =20 mg/L  [Catalyst]0=1.0 g/L  300 W Xe lamp | 85.1% in 1 h | (Wang et al. 2018) |
| P-g-C3N4 | [TC]0 =20 mg/L  [Catalyst]0=0.5 g/L  300 W Xe lamp | 93.7% in 120 min | (Zhang et al. 2020) |
| Pt2+-g-C3N4 | [RhB]0 =4 mg/L  [Catalyst]0=1 g/L  white LED (4.6 V, 2 A) | 90% in 120 min | (Chen et al. 2021) |
| NiO/Cd/g-C3N4 | [MB]0=3\*10-5 mol/L  [Catalyst]0=1.0 g/L  50 W LED lamp | 81.8% in 90 min | (Karimi et al. 2020) |
| g-C3N4/Cd-ZnO | [MB]0 =10 mg/L  [Catalyst]0=0.5 g/L | 95% in 120 min | (Sher et al. 2021) |
| Cd-g-C3N4 | [TC]0 =10 mg/L  [Catalyst]0=0.8 g/L  300 W Xe lamp | 98.1% in 60 min | This work |



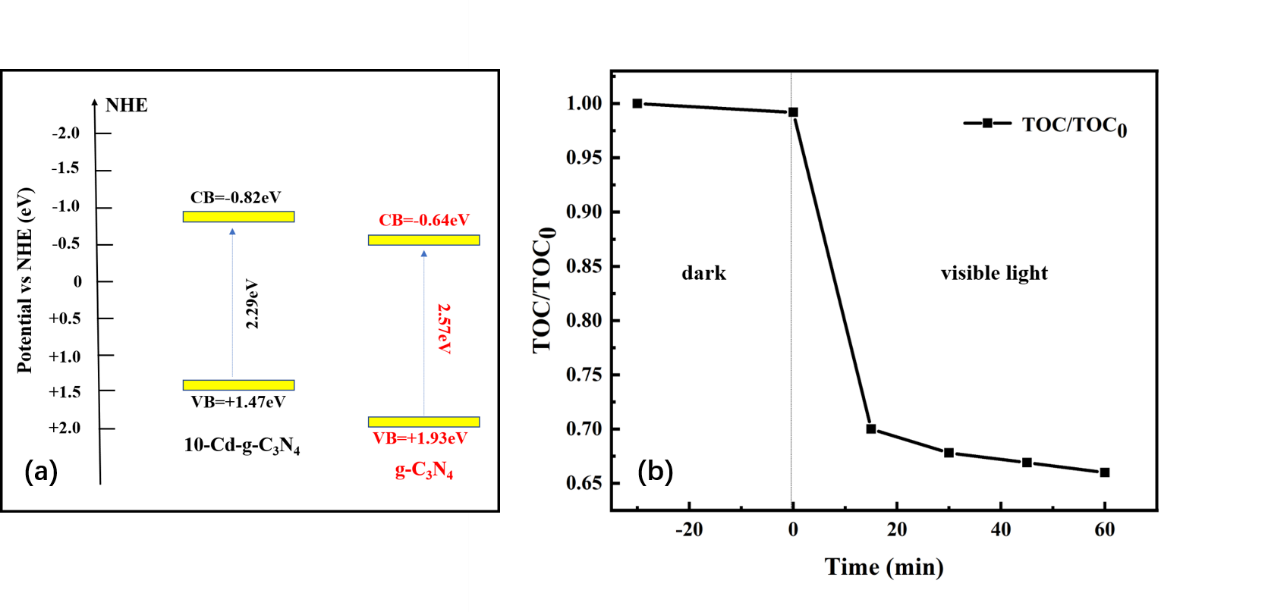
**Fig. S1** (a) EDS spectrum of 10-Cd-g-C3N4. (b-f) Elemental mapping of 10-Cd-g-C3N4.

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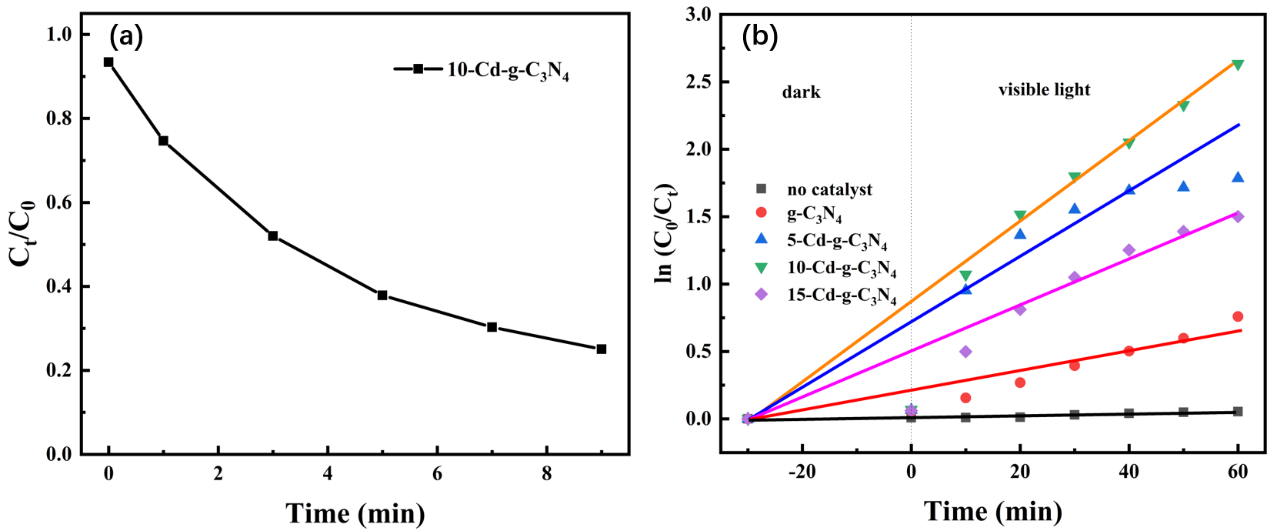
**Fig. S2** (a) N2 adsorption−desorption isotherms of pure g-C3N4 and 10-Cd-g-C3N4. (b) The pore size distributions image of pure g-C3N4 and 10-Cd-g-C3N4.



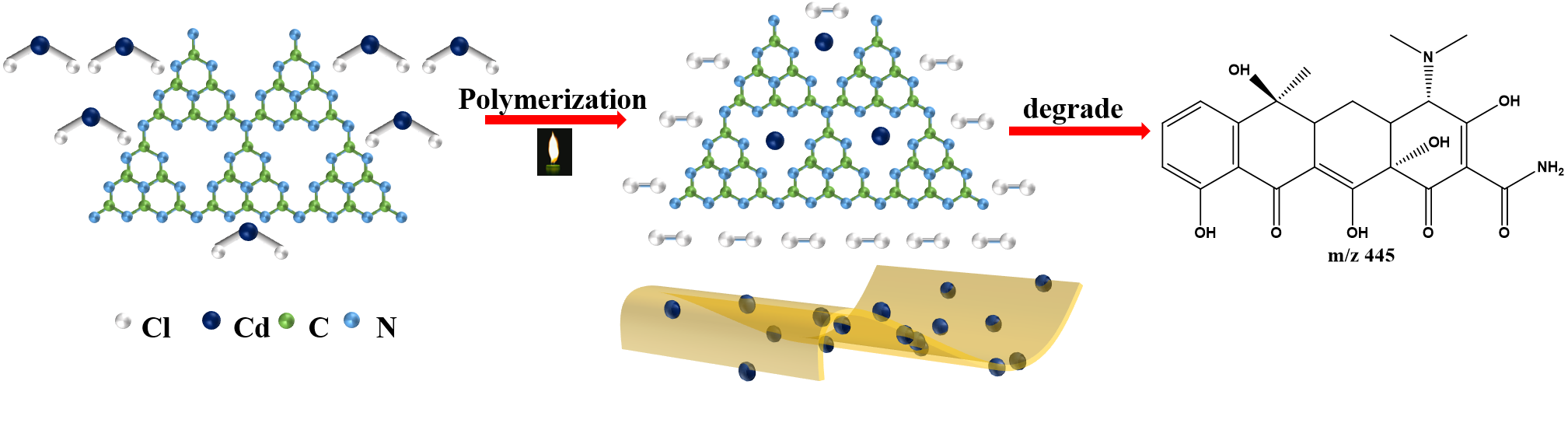
**Fig. S3** (a) The UV–vis diffuse reflectance spectra of pure g-C3N4 and Cd-g-C3N4. (b) The PL spectra of pure g-C3N4 and Cd-g-C3N4.

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**Fig. S4** (a) Band structure diagram of pristine g-C3N4 and 10-Cd-g-C3N4.(b) TOC removal curves of TC on 10-Cd-g-C3N4.



**Fig. S5** (a) The photocatalytic degradation of 10-Cd-g-C3N4 catalyst within 10 min. (b) First-order plots of photocatalytic degradation with different amounts cadmium catalysts.



**Scheme S1** The brief diagram of 10-Cd-g-C3N4 prepared process.

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