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

Supporting Information for:

Graphitic carbon nitride nanosheets with low O_{N1}-doping content as an efficient photocatalyst for organic pollutants degradation

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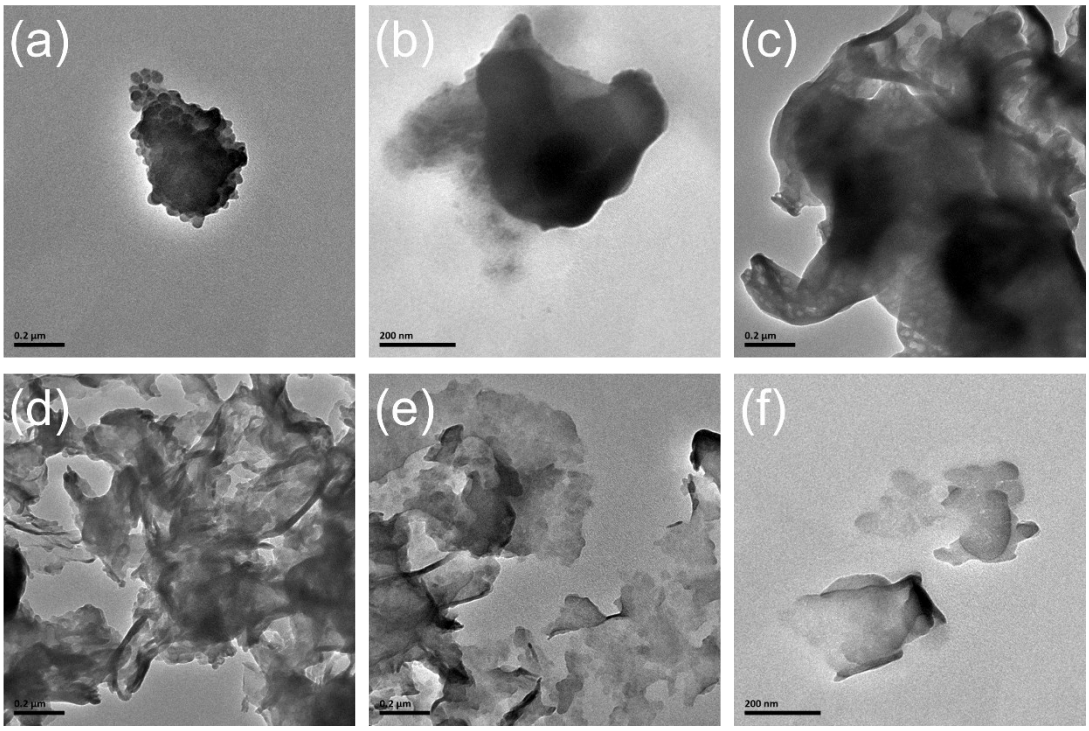

Fig. S1 TEM images of Um-400 (a), Um-450 (b), Um-500 (c), Um-550 (d), Um-600 (e), Um-650 (f).

Table S1 Characterization of the Um-x samples.

Catalysts	Element content (wt%)			C/N	*S*	*A*	E_{CB}/E_{VB}	E_g
	C	N	O	atomic ratio	(m^2 g^{-1})	(nm)	(eV)	(eV)
Um-400	32.58	52.57	12.6	0.723	17	439	-1.15/1.67	2.82
Um-450	35.36	56.96	6.25	0.724	30	464	-1.11/1.56	2.67
Um-500	35.92	57.20	4.81	0.733	46	475	-1.11/1.50	2.61
Um-550	37.34	59.04	2.16	0.738	72	484	-1.16/1.40	2.56
Um-600	37.08	58.62	2.44	0.738	82	452	-1.17/1.57	2.74
Um-650	37.43	58.84	2.01	0.742	88	441	-1.19/1.62	2.81

Note: S, BET surface area; A, absorption edge; Eg, the band gap energy; E_{CB}, E_{VB}, the valence band and conduction band potentials, respectively.

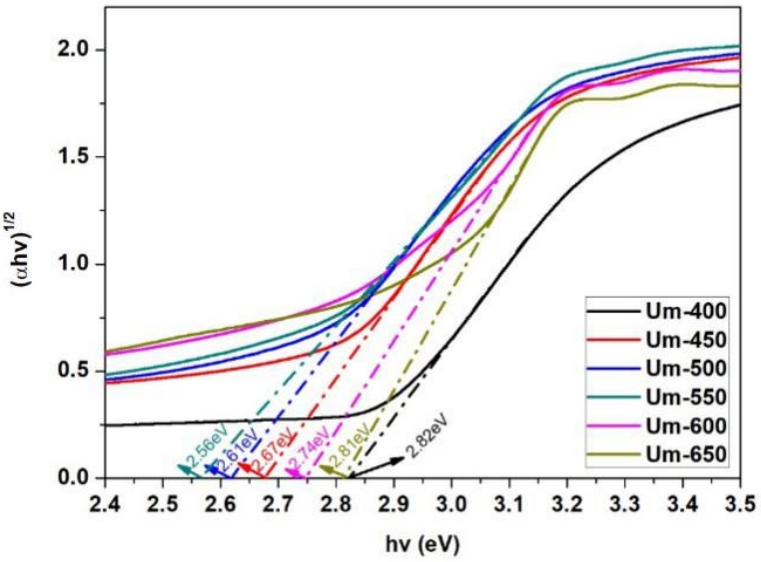

Fig. S2 The energy band gap of Um-x samples (extrapolated by the Tauc plot).

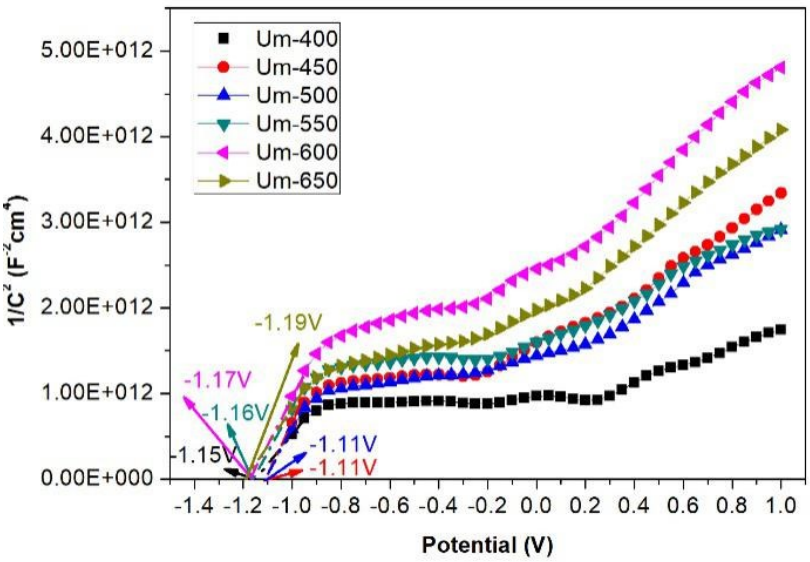

Fig. S3 The CB value of Um-x samples.

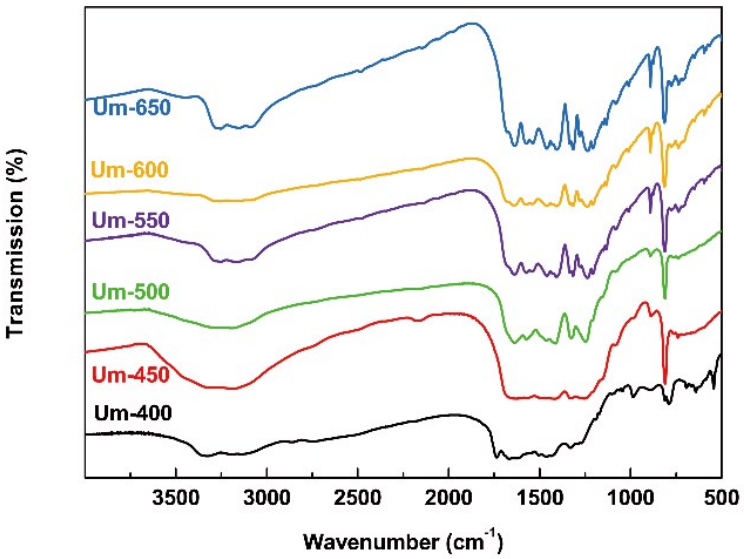

Fig. S4 FT-IR spectra of Um-x samples.

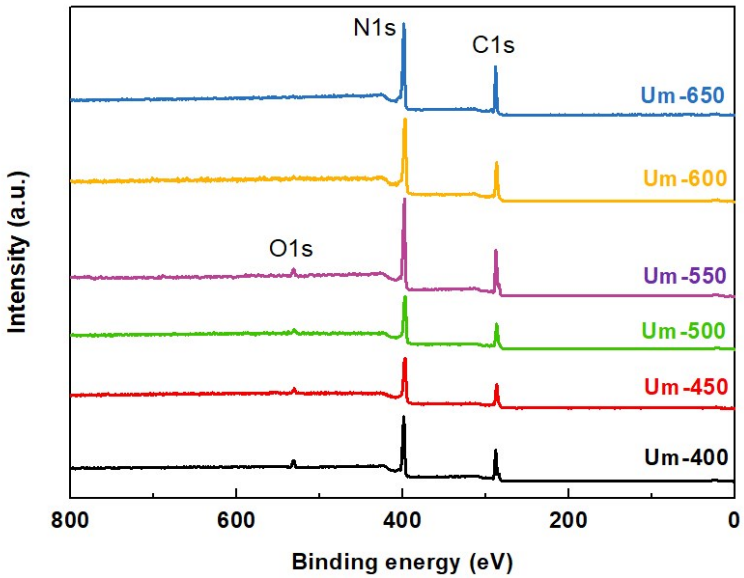

Fig. S5 XPS survey patterns of Um-x samples.

Table S2 Element contents of HT-x samples

$g\text{-}C_3N_4$	Element content (wt%)			C/N atomic ratio
	C	N	O	
HT-0	28.42	49.65	18.34	0.668
HT-20	31.60	56.35	9.23	0.654
HT-40	31.97	57.73	7.87	0.646
HT-60	35.00	61.30	1.98	0.666

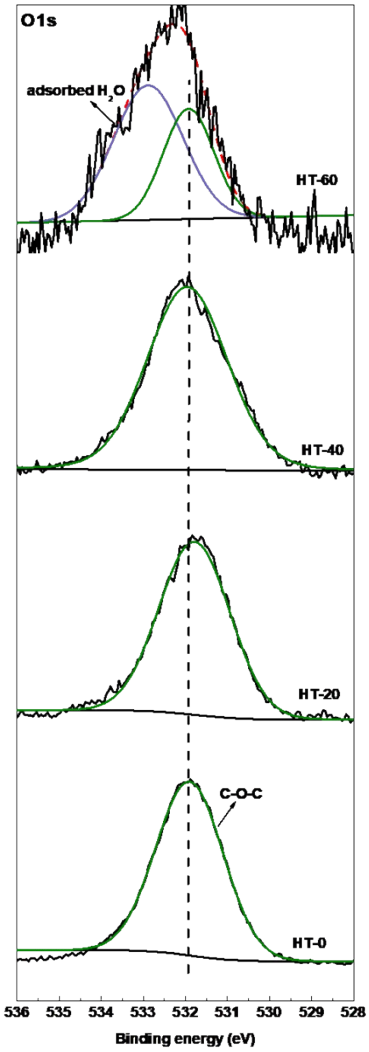

Fig. S6 The high resolution O 1s XPS spectra of HT-x samples.

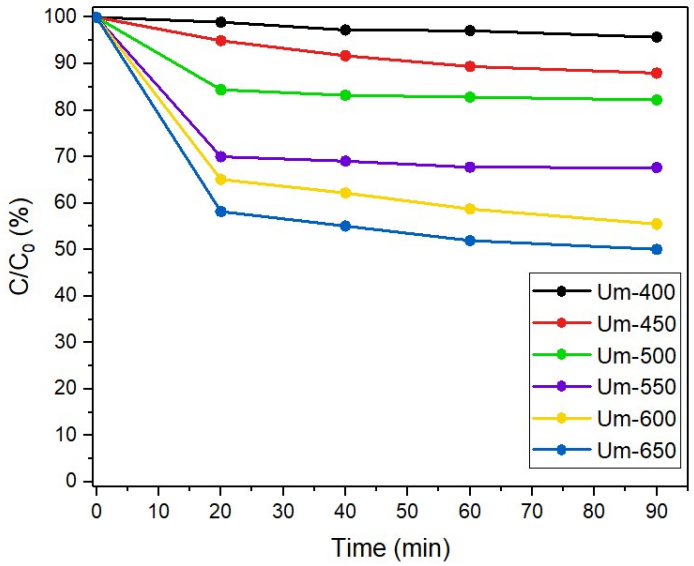

Fig. S7 RhB adsorption equilibrium in dark condition of Um-x.

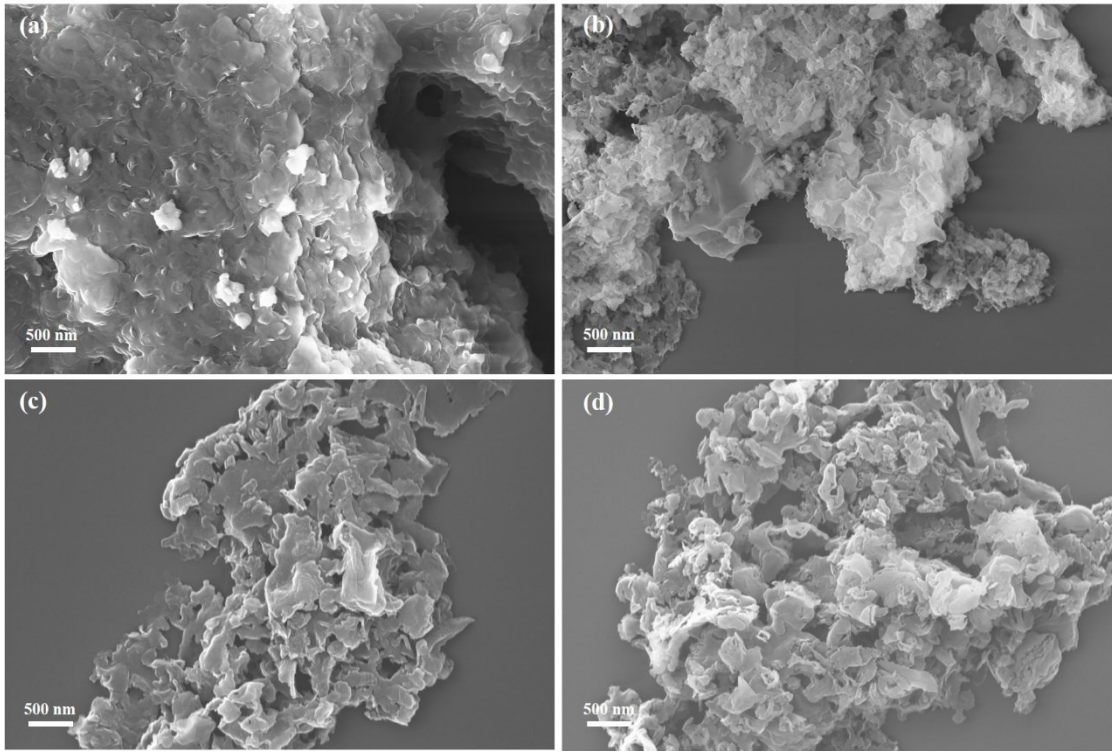

Fig. S8 SEM images of HT-x: (a) HT-0; (b) HT-20; (c) HT-40; (d) HT-60.

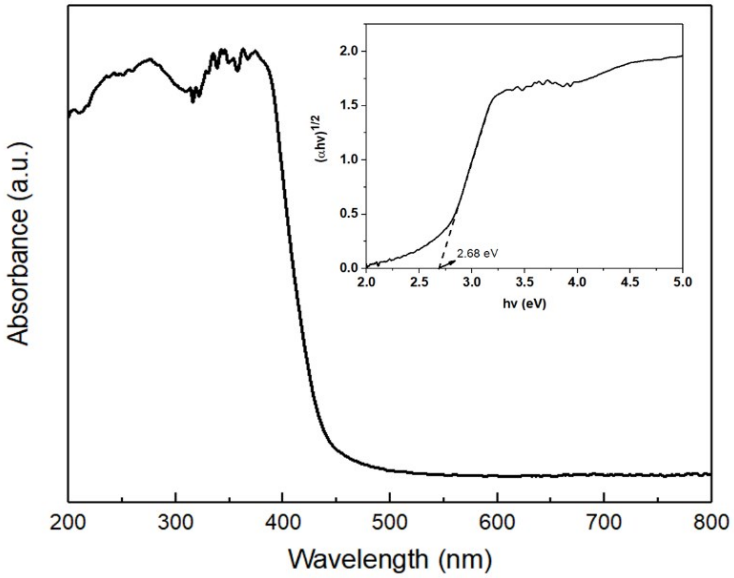

Fig. S9 UV-Vis DRS spectrum and energy band gap of HT-60.

Table S3 Comparison of RhB photodegradation of g-C_3N_4-based photocatalysts

Photocatalysts	RhB photodegradation (time / efficiency)	Ref. (year)
H-ZSM-5/ g-C_3N_4	30min / 99%	[1](2019)
g-C_3N_4/CNTs/Ag_3PO_4	10min / 100%	[2](2019)
APO/CN-5 THF	7.5min / 100%	[3](2019)
BCN-3	30min / 100%	[4](2019)
Co-doped g-C_3N_4	25min / 99%	[5](2019)
Ph20-g-C_3N_4	25min / 100%	[6](2019)
SM-CN	20min / 95%	[7](2019)
TiO_2 NR/CN NS	12min / 99%	[8](2018)
g-C_3N_4/Bi_5O_7I-10	20min / 98.2%	[9](2018)
rGO/ g-C_3N_4	30min / 97.2%	[10](2018)
MT- g-C_3N_4	30min / 99%	[11](2018)
Pt@TiO_2/ g-C_3N_4	8min / 93%	[12](2018)
OA/N-GQD@ g-C_3N_4	10min / 99%	[13](2020)
U-300	30min / 90%	[14](2018)
g-C_3N_4 (w-N2)	12min / 100%	[15](2018)
ECD-CN	10min / 99%	[16](2017)
g-C_3N_4 nanosheets	9min / 99.4%	[17](2016)
O-C_3N_4/Ag@AgCl	15min / 100%	[18](2016)
$ZnIn_2S_4$/ g-C_3N_4-20	20min / 100%	[19](2015)
Ag/ g-C_3N_4	30min / 90%	[20](2015)
g-CNS/Au/CdS	5min / 99%	[21](2015)
P-doped g-C_3N_4	10min / 100%	[22](2015)
SnS_2/ g-C_3N_4	20min / 99.8%	[23](2015)
Ag@AgCl-9/CN	30min / 100%	[24](2014)

Co_3O_4/PCNs	30min / 100%	[25](2014)
O-C_3N_4@TiO_2	20min / 100%	[26](2014)
WO_3-g-C_3N_4	30min / 90%	[27](2014)
Ag@AgCl/ g-C_3N_4	20min / 100%	[28](2014)
In_2S_3/ g-C_3N_4	30min / 96%	[29](2014)
Ag@AgBr/ g-C_3N_4	10min / 95%	[30](2014)
g-C_3N_4/Ag_3PO_4	10min / 96%	[31](2014)
p-g-C_3N_4	30min / 99%	[32](2012)

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