Supporting Information

Nitrogen-doped BiOBr nanosheets with preferentially exposed (102) facets enhanced visible-light photoreactivity

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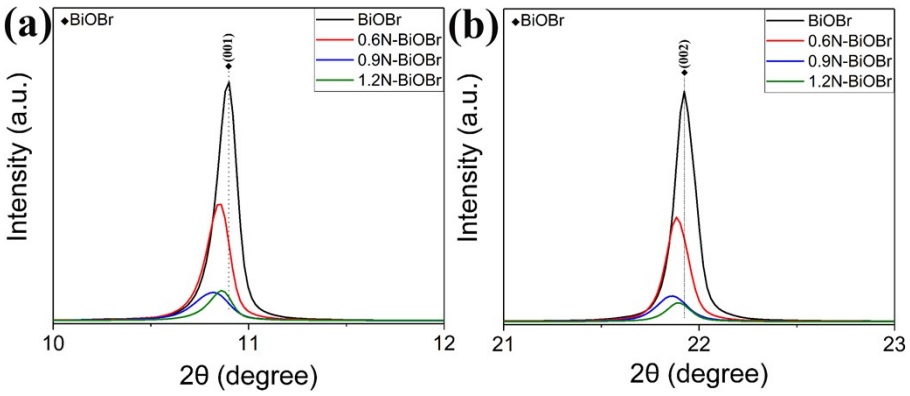

Fig. S1 XRD amplified patterns of pure BiOBr and *x*N-BiOBr.

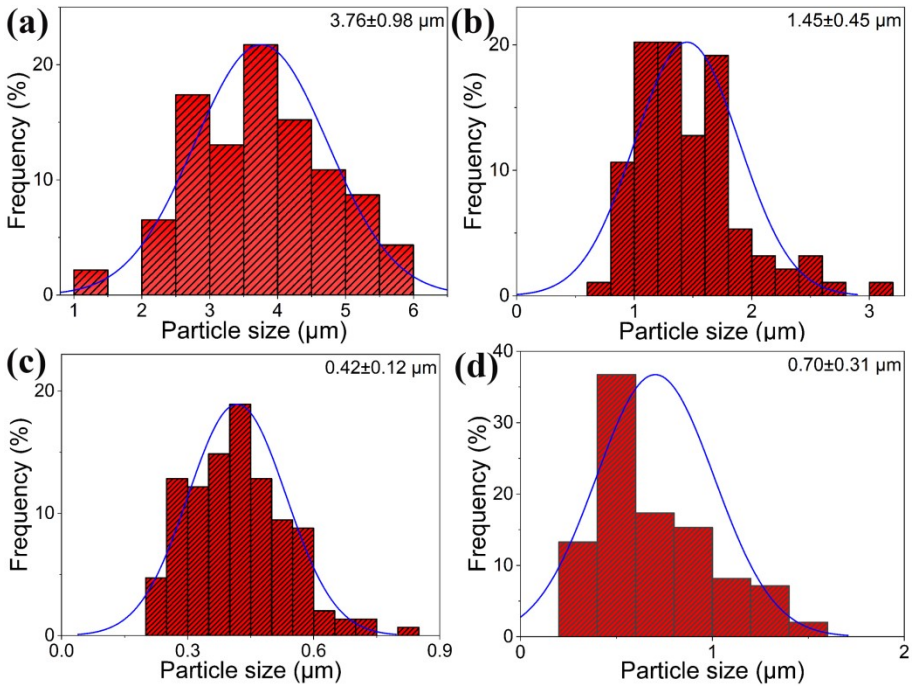

Fig. S2 The particle size distributions of (a) BiOBr, (b) 0.6N-BiOBr, (c) 0.9N-BiOBr and (d) 1.2N-BiOBr.

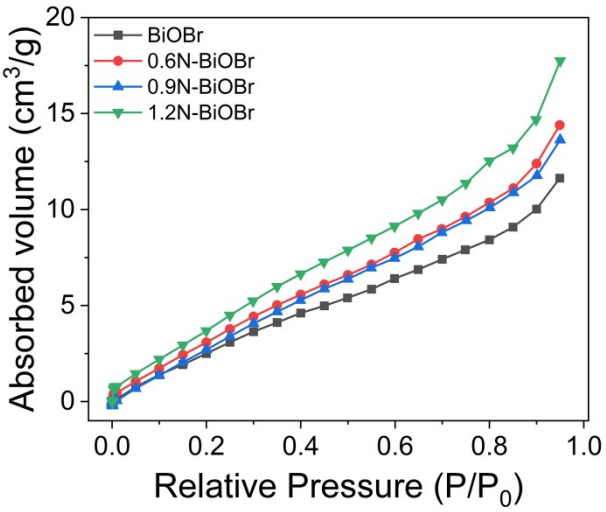

Fig. S3 N_2 adsorption isotherms of pure BiOBr and *x*N-BiOBr.

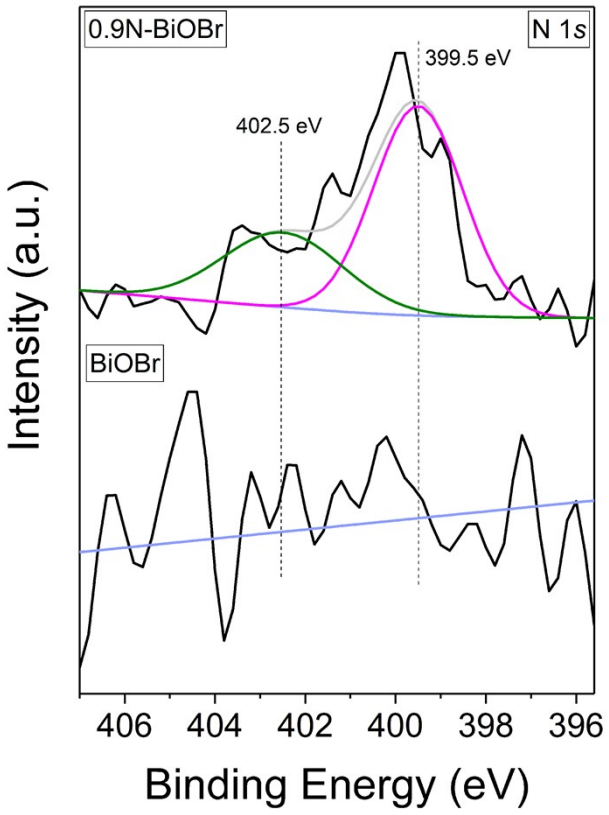

Fig. S4 Typical high-resolution XPS spectra of N 1s of pure BiOBr and 0.9N-BiOBr.

We selected a typical 0.6N-BiOBr as a model photocatalyst based on the results of the previous study, and conducted experiments on the effect of pH on the photocatalytic performance of the samples under visible-light irradiation for 10 min in solutions with different pH values. The pH value of the original reaction solution was 6.9 after adding the 0.6N-BiOBr, and the pH of the reaction solution was adjusted to 9.3 by ammonia water, and to 2.1 and 4.0 by 0.05 mol L^{-1} dilute hydrochloric acid.

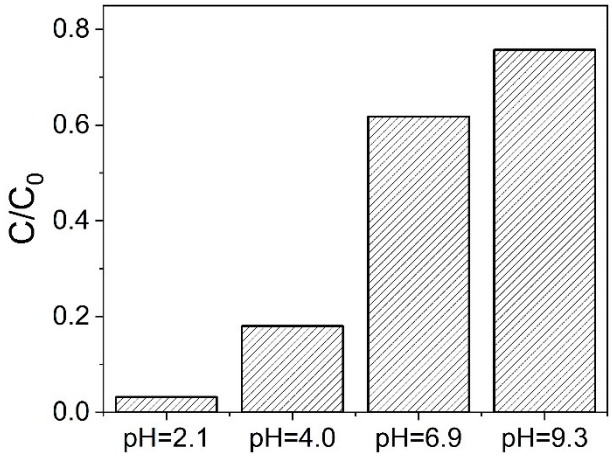

Fig. S5 Photodegradation performance of a typical 0.6N-BiOBr sample after visible-light irradiation for 10 min at various pH values. (Reaction conditions: RhB 10 mg L^{-1}; photocatalyst: 0.1 g L^{-1})

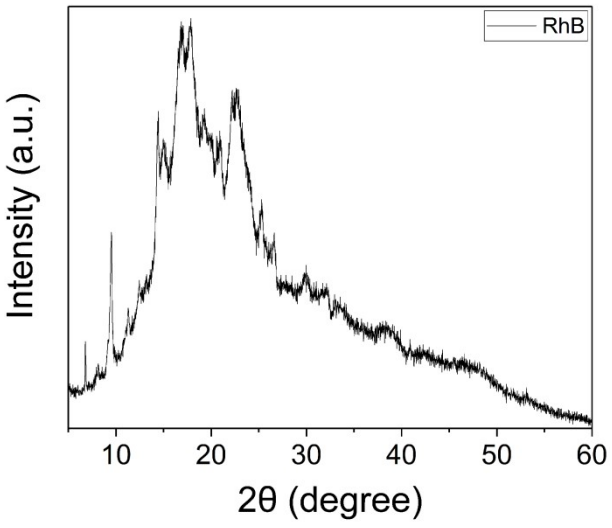

Fig. S6 XRD pattern of RhB.

Table S1 Comparison of photodegradation of RhB via use of different photocatalysts under visible-light irradiation.

Entry	Catalysts	Reaction conditions			Degradation performance	References
		Temperature (℃)	Load of catalyst (g L^{-1})	Reaction time (min)		
1	SiO_2-Au GSH-BPEI	25	0.25	600	38%	[1]
2	F-Bi_2WO_6 (R_F=0.6)	25	1.0	180	85%	[2]
3	ZnO-10%RGO	25	0.25	120	98%	[3]
4	BPZ-4	25	0.5	30	99%	[4]
5	S3-BiOBr	25	0.33	20	99%	[5]
6	BOB-CNC-10%350-2h	25	0.2	60	97%	[6]
7	BM55	25	0.5	60	98%	[7]
8	0.9N-BiOBr	10	0.1	45	99%	This work

To eliminate differences in the exposure of active sites, the surface-area-normalized kinetic constants (k/S_{BET}) of pure BiOBr, 0.6N-BiOBr, 0.9N-BiOBr and 1.2N-BiOBr were calculated as 0.36, 1.56, 3.52, and 0.85 $mg \cdot m^{-2} \cdot min^{-1}$, respectively (Table S2).

Table S2 Kinetic constants, BET surface areas and surface-area- normalized kinetic constants of *x*N-BiOBr and pure BiOBr samples.

Sample	BiOBr	0.6N-BiOBr	0.9N-BiOBr	1.2N-BiOBr
k (min^{-1})	0.532×10^{-2}	3.229×10^{-2}	8.152×10^{-2}	1.946×10^{-2}
S_{BET} ($m^2 \cdot g^{-1}$)	17.706	20.691	23.174	22.969
k/S_{BET} ($g \cdot m^{-2} \cdot min^{-1}$)	0.30×10^{-3}	1.56×10^{-3}	3.52×10^{-3}	0.85×10^{-3}
k/S_{BET} ($mg \cdot m^{-2} \cdot min^{-1}$)	0.36	1.56	3.52	0.85

Table S3 The atomic ratio of Bi, O, Br, N and N/Bi in pure BiOBr and *x*N-BiOBr samples determined from XPS spectra.

Element (atom%)	BiOBr	0.6N-BiOBr	0.9N-BiOBr	1.2N-BiOBr
N	0	1.24	3.23	2.42
O	41.10	36.10	26.04	24.97
Br	30.80	32.74	34.74	34.85
Bi	28.1	29.92	35.99	37.76
N/Bi	0	4.14×10^{-2}	8.97×10^{-2}	6.41×10^{-2}

References

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