

Mannitol-assisted Architecture of BiOBr with Two Kinds of Anion Vacancies and High Specific Surface Area for Excellent Photocatalytic Applications

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Figure S1. The gas phase products were detected by gas chromatograph (CEL-PAEM-D8, China)

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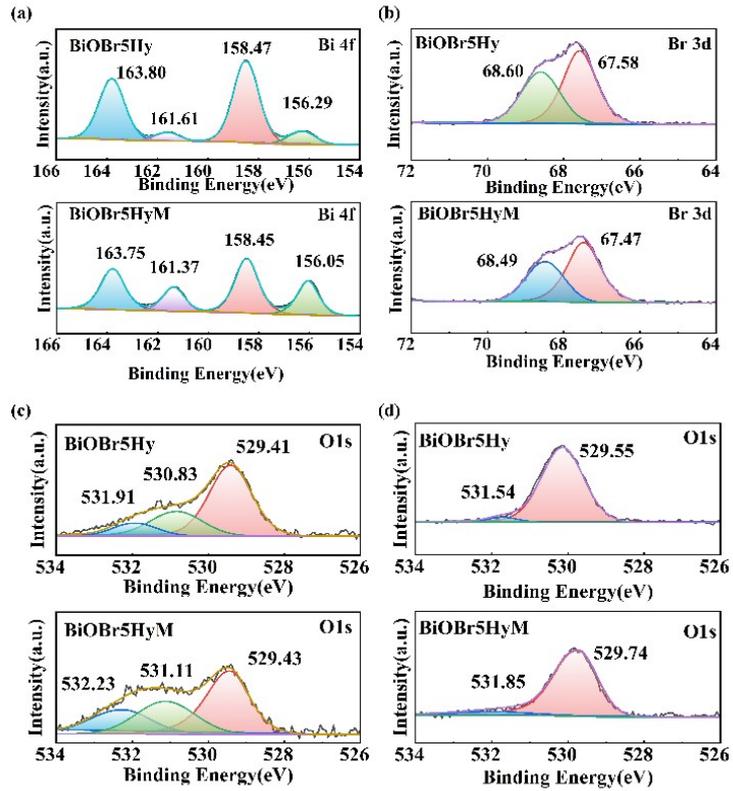


Figure S2. XPS (a) Bi 4f , (b) Br 3d, (c) O1s before etch and (d) O1s after etch of BiOBr5Hy and BiOBr5HyM

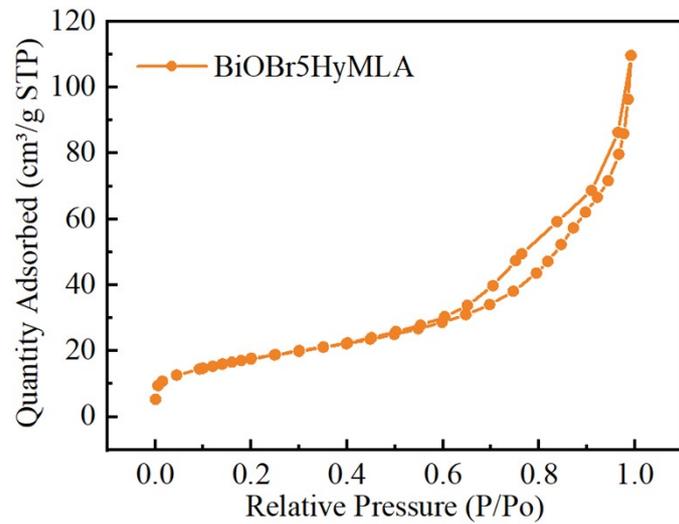


Figure S3. The N_2 adsorption–desorption isotherms and pore size distributions of BiOBr5HyMLA

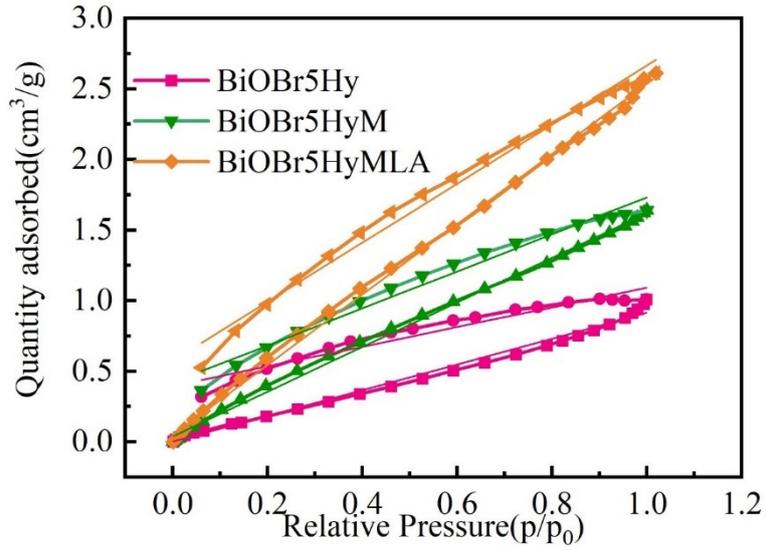


Figure S4. Fitted CO₂ adsorption-desorption isotherms

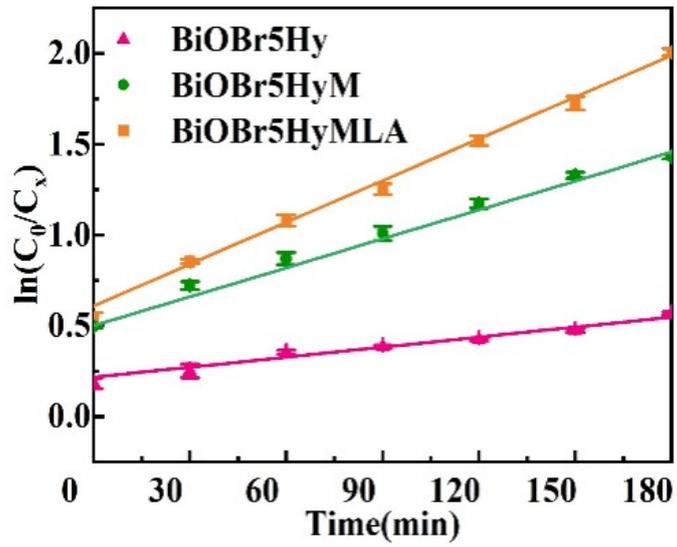


Figure S5 The photodegradation kinetic curves of as-prepared samples towards 20 mg·L⁻¹MO

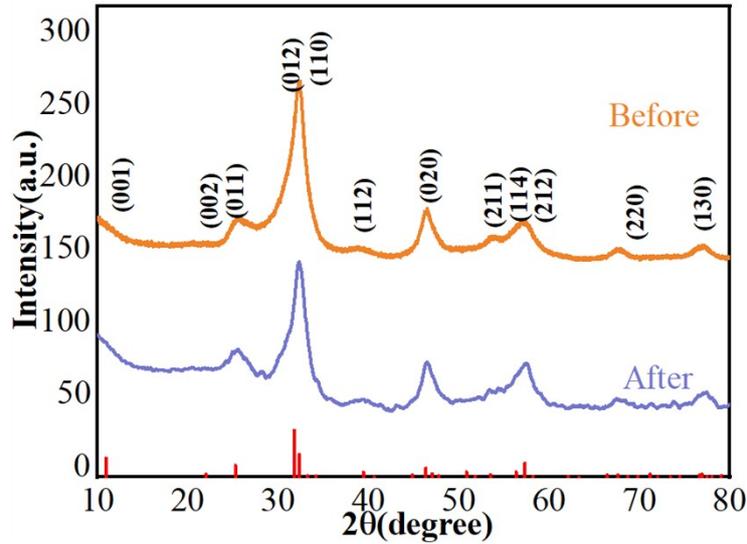


Figure S6. Comparison of XRD spectra of BiOBr5HyMLA before and after photocatalysis test

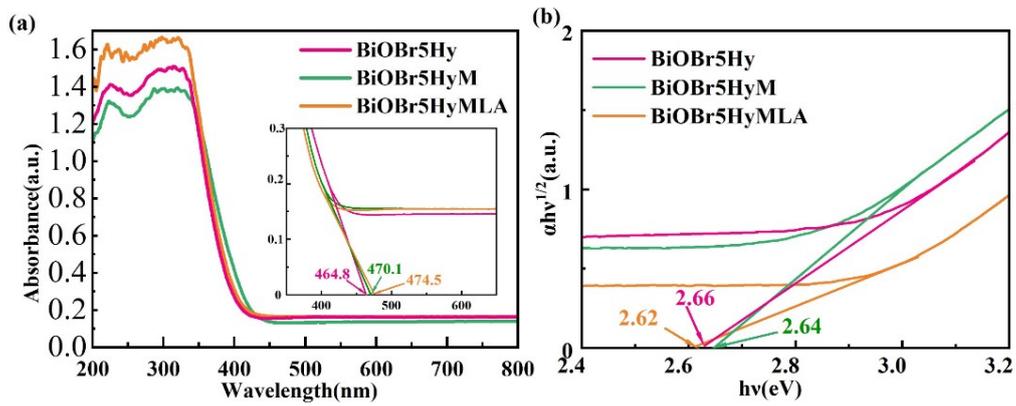


Figure S7 (a) UV-vis spectra and (b) the corresponding $(\alpha hv)^{1/2} - (hv)$ curves of BiOBr5Hy, BiOBr5HyM and BiOBr5HyMLA

Table S1 Fitting results of CO₂ adsorption-desorption isotherms

	k(adsorption)	R ² (adsorption)	k(desorption)	R ² (desorption)
BiOBr5Hy	0.91	0.991	0.69	0.937
BiOBr5HyM	1.58	0.998	1.31	0.977
BiOBr5HyMLA	2.48	0.998	2.09	0.988

Table S2 Comparison of photocatalytic reducing CO₂ in similar systems

Photocatalyst	Prepared methods and conditions	CO yield ($\mu\text{mol}\cdot\text{g}^{-1}\cdot\text{h}^{-1}$)	Selectivity (CO, %)	Stability (%)	Ref
BrGL150	Hydrothermal method, 160°C/24 h	4.1	12	—	[1]
BiOBr	Hydrothermal method, 180°C/12h	3.81	—	2.95	[2]
BiOBr-ROV	Solvothermal method, 160°C/12 h Reduction, 10°C/40 min	3.92	—	44.6	[3]
BiOBr	Precipitation method, 90°C/1 h Thermal treatment, 450°C/2 h	3.33	60.65	—	[4]
BiOBr5HyMLA	Precipitation method, room temperature/0.5 h	39.51	90.64	71.9	Our work

Table S3 Comparison of photocatalytic degrading MO in similar systems

Photocatalyst	m (g)	C_{MO} ($\text{mg}\cdot\text{L}^{-1}$)	Xe lamp (W)	Time (min)	η (%)	TOF ($\text{g}\cdot\text{g}^{-1}\cdot\text{min}^{-1}$)	Ref.
BiOBr	0.1	10	500	180	95	0.0263	[5]
BiOBr0.7	0.05	10	300	20	84	0.042	[6]
BiOBr _{0.2} Cl _{0.8}	5	10	350	60	92.5	0.0001	[7]
BiOBr5HyMLA	0.02	20	300	180	86.87	0.0482	Our work

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