Morphology Regulation and Photocatalytic CO_2 Reduction of Lead-Free Perovskite $Cs_3Sb_2I_9$ Microcrystals

Yuang Hai[‡,a], Wei Huang[‡,a], Ziwen Li[‡,a], Daofu Wu[a,*], Qiang Huang[b,*], Xiaosheng Tang[a,b,c,*]

[a] Key Laboratory of Optoelectronic Technology & Systems, Ministry of Education, Chongqing University, Chongqing 400044, China

[b] College of Optoelectronic Engineering, Chongqing University of Posts and Telecommunications, Chongqing 400065, China

[c] School of Materials Science and Engineering, Zhengzhou University, Zhengzhou 450001, China

[‡] These authors contributed equally to this work

*** Corresponding author.**

E-mail: xstang@cqu.edu.cn (X. Tang), wudaofu@cqu.edu.cn (D. Wu), qhuang1986@163.com (Q. Huang)

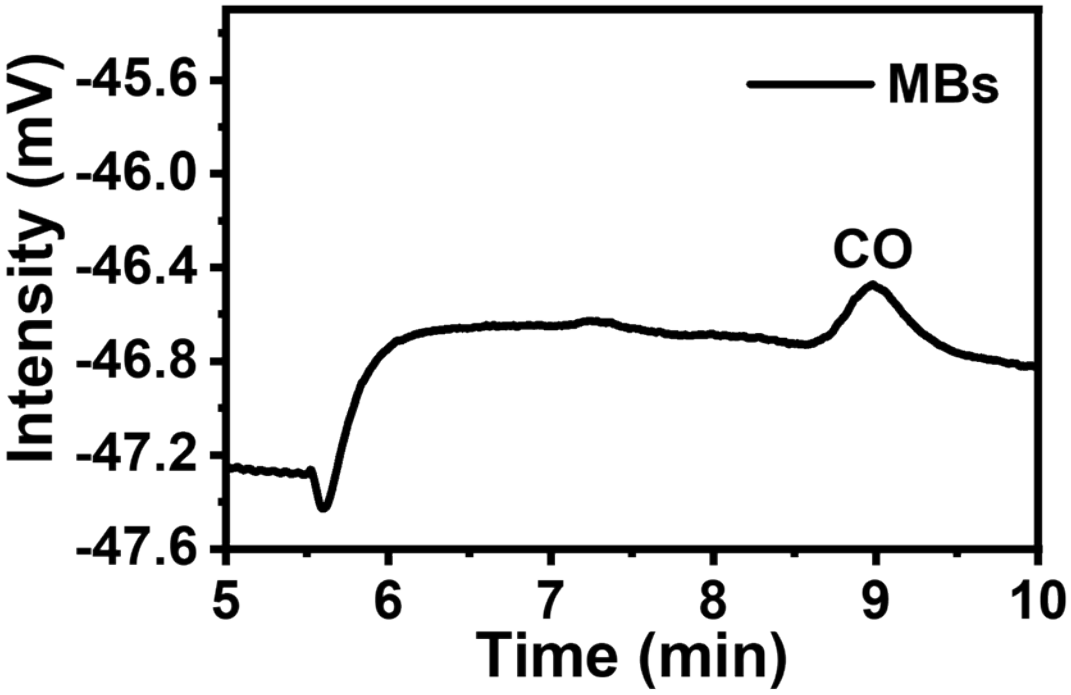

Figure S1. The gas chromatography spectra for photocatalytic reaction in the presence of $Cs_3Sb_2I_9$ MBs.

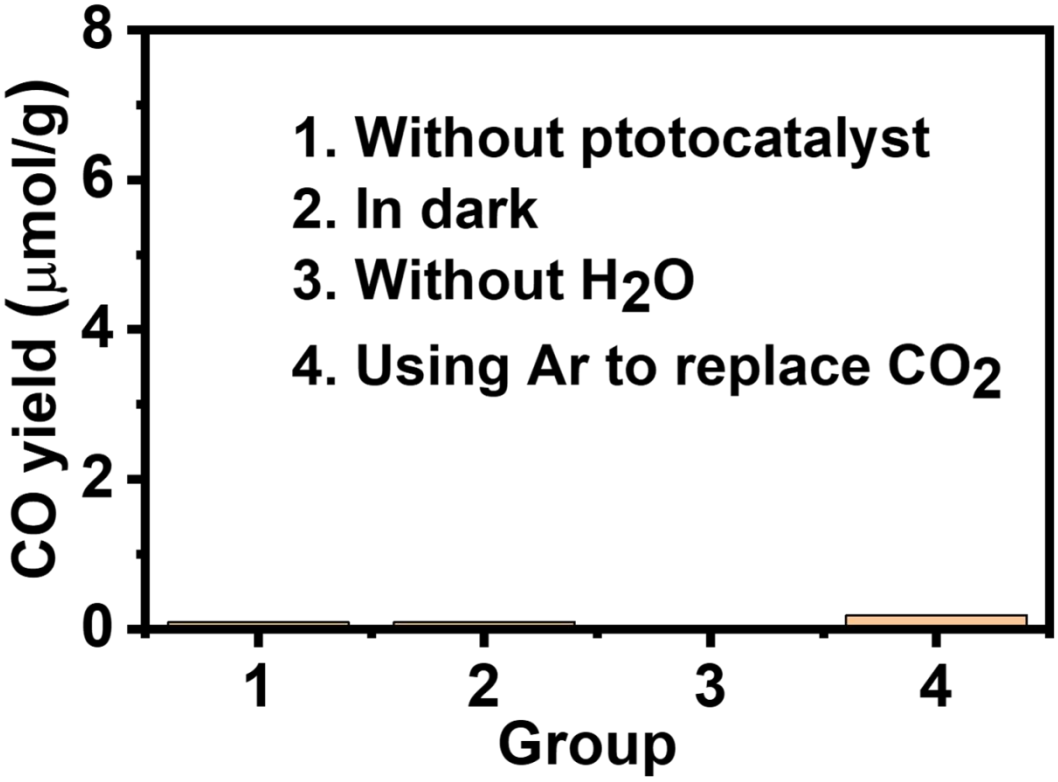

Figure S2. Photocatalytic CO_2 reduction performance of the $Cs_3Sb_2I_9$ MBs under different reaction conditions.

Table S1. Comparison of the photocatalytic CO_2 reduction activity and CO selectivity of various perovskites-based photocatalysts

Catalysts	CO/mol $g^{-1}h^{-1}$	Selectivity/%	Cocatalyst	Model	Light	References
$Cs_3Sb_2I_9$ MBs	2.4	100	/	gas-solid	Xe, ≥ 420 nm	This work
$Cs_3Sb_2I_9$ MCs	1.7	100	/	gas-solid	Xe, ≥ 420 nm	This work
$Cs_3Bi_2I_9$	7.76	83.9	/	gas-solid	UV, 305 nm	1
$Cs_2AgBiBr_6$	2.35	59.9	/	ethyl acetate	AM 1.5G	2
$CsPbBr_3$/Pd Nanosheet	1.3	36.7	Pd	gas-solid	Xe lamp	3
$CsPbBr_3$@TiO_2	3.9	32.3	TiO_2	ethyl acetate / isopropano	AM 1.5G	4
$CsPbBr_3$@ZIF-67	0.5	12.8	ZIF-67	gas-solid	AM 1.5G	5
$CsPbBr_3$@GO	4.89	66.4	GO	ethyl acetate	AM 1.5G	6
$CsPbBr_3$ QDs	4.25	73.9	/	ethyl acetate / water	AM 1.5G	7
$CsPbBr_3$@UiO-66(NH_2)	8.2	96.97	UiO-66(NH_2)	ethyl acetate / wate	Xe, ≥ 420 nm	8
Fe doped $CsPbBr_3$	3.2	34.4	Fe	gas-solid	Xe, 400 W	9
$CsPbBr_3$/MXene	26.61	79.73	MXene	ethyl acetate / water	Xe, ≥ 420 nm	10
Co doped $CsPbBr_3$ $Cs4PbBr_6$	11.95	/	Co	pure water	Xe, ≥ 400 nm	11
$CsPbBr_3$/TiO_2	12.9	/	TiO_2	ethyl acetate / water	Xe, ≥ 400 nm	12
$Cs_3Bi_2Br_9$	26.95	98.7	/	gas-solid	AM 1.5G	13
$Cs_3Bi_2Cl_9$	21.01	98.3	/	gas-solid	AM 1.5G	14

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