Electronic supplementary information

Ferroelectric polarization and thin-layered structure synergistically promoting CO_2 photoreduction of Bi_2MoO_6

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Table S1. The crystal lattice parameters of the series of Bi_2MoO_6 photocatalysts.

Sample	*a* (Å)	*b* (Å)	*c* (Å)	Vol (Å^3)
BMO	5.48338	16.20732	5.49011	487.91
BMO-P	5.49058	16.19847	5.48245	487.60
BMO-U	5.49556	16.20143	5.48236	488.13
BMO-U-P	5.49223	16.21196	5.48442	488.33

Table S2. Comparison with related photocatalysts for CO_2 reduction.

Photocatalyst	Co-catalyst	Product	R_{max}[a]	Ref.
Bi_2MoO_6-U-P	-	CO	14.38	This work
$Bi_{24}O_{31}Cl_{10}$-OV	-	CO	0.90	1
BiOI	-	CO	5.18	2
Mg-In LDH	-	CO	4.00	3
$In_2Ge_2O_7$(En)	Pt	CO	0.90	4
β-Ga_2O_3	-	CO	1.46	5
$CuGaO_2$	-	CO	9.00	6
TiO_2	Rh	CO	5.10	7

[a] Maximum formation rate reported for the product (μmol g^{-1} h^{-1}).

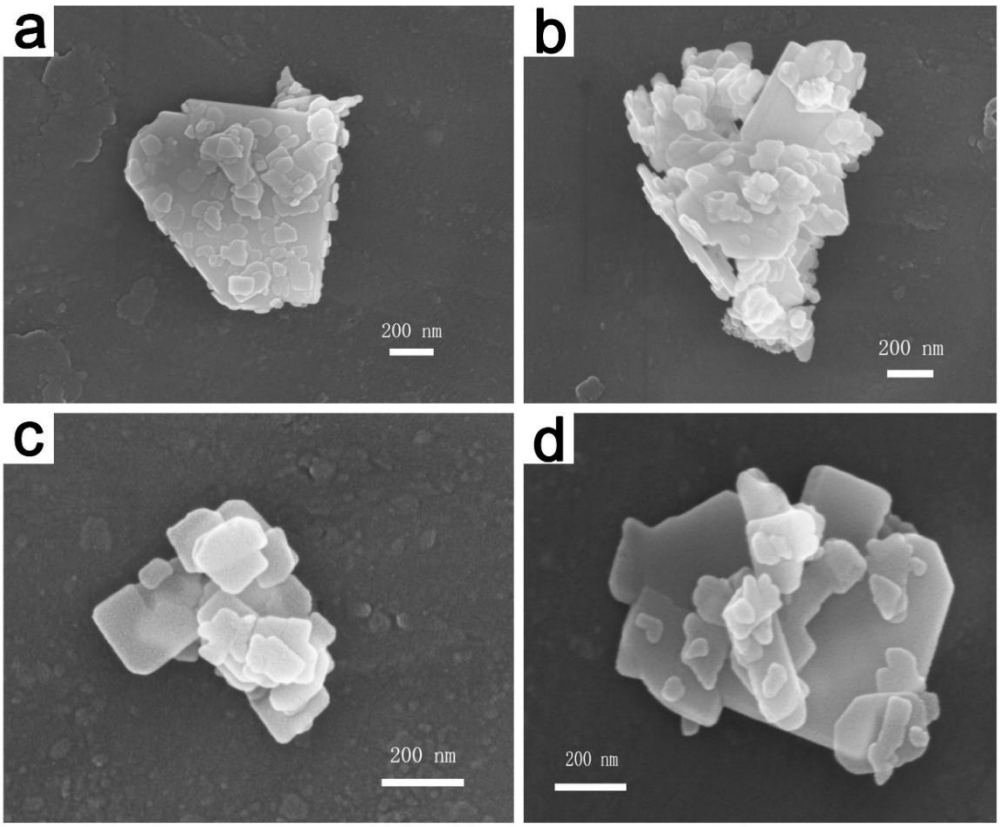

Figure S1. The SEM images of (a) BMO, (b) BMO-P, (c) BMO-U and (d) BMO-U-P samples.

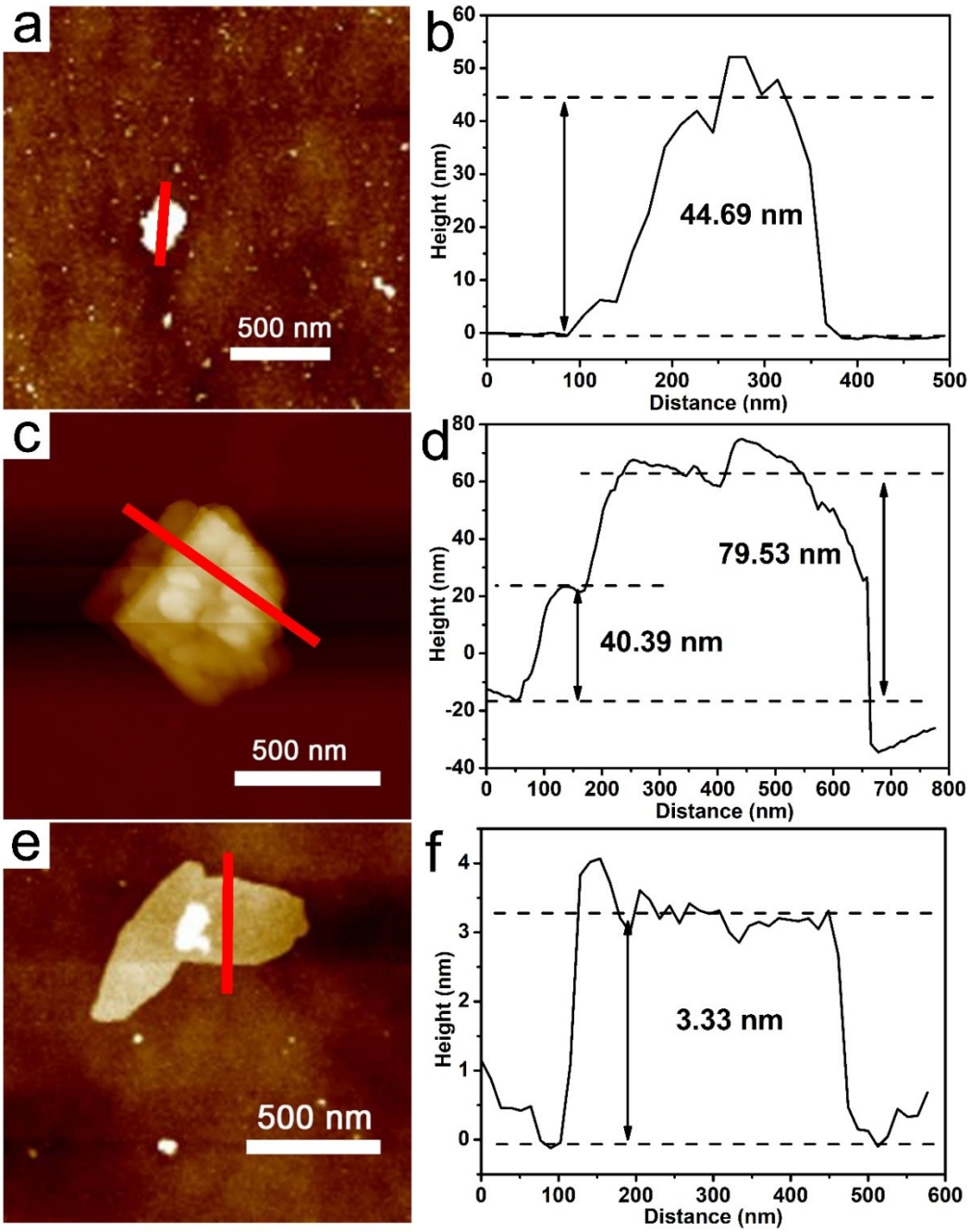

Figure S2. (a) The AFM image and (b) the corresponding height graph of BMO. (c) The AFM image and (d) the corresponding height graph of BMO-P. (e) The AFM image and (f) the corresponding height graph of BMO-U.

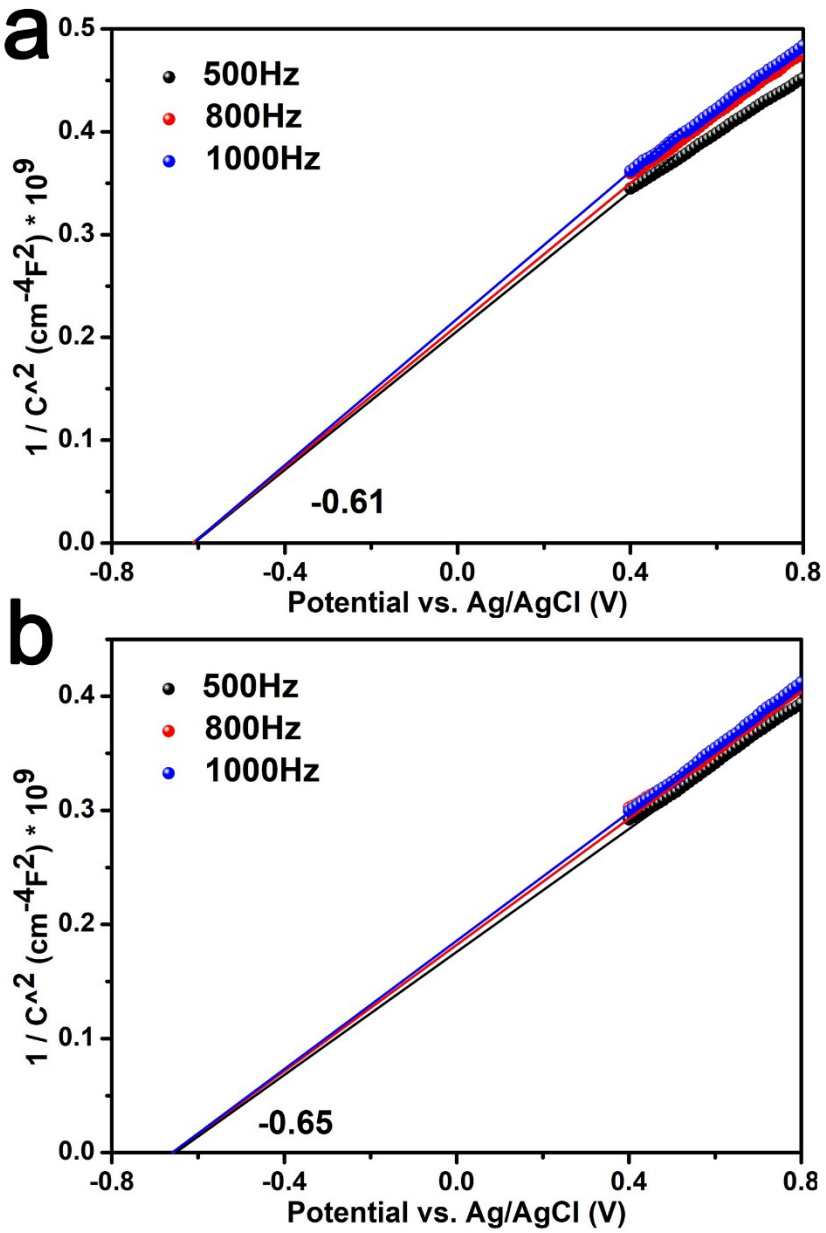

Figure S3. The Mott-Schottky plots of (a) BMO-P, and (b) BMO-U under three different frequencies.

References

1. K. Teramura, S. Iguchi, Y. Mizuno, T. Shishido and T. Tanaka, *Angew. Chem. Int. Ed.*, 2012, **51**, 8008.
2. W. Li, F. Wang, M. Li, X. Chen, Z. H. Ren, H. Tian, X. Li, Y. H. Lu and G. R. Han, *Nano Energy*, 2018, **45**, 304.
3. X. Y. Fan, Z. P. Wu, L. C. Wang and C. Y. Wang, *Chem. Mater.*, 2016, **29**, 639.
4. Q. Liu, Y. Zhou, Y. Ma and Z. G. Zou, *RSC. ADV.*, 2012, **2**, 3247.
5. H.-a. Park, J. H. Choi, K. M. Choi, D. K. Lee and J. K. Kang, *J. Mater. Chem.*, 2012, **22**, 5304.
6. J. W. Lekse, M. K. Underwood, J. P. Lewis and C. Matranga, *J. Phys. Chem. C*, 2011, **116**, 1865.
7. Y. Kohno, H. Hayashi, S. Takenaka, T. Tanaka, T. Funabiki and S. Yoshida, *J. Photochem. Photobiol. A.*, 1999, **126**, 117.