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Supplementary Materials

Controllable Hydrothermal Synthesis and Photocatalytic Performance of Bi_2MoO_6 Nano/microstructures

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Part I: Calculations

1. Relationship between electron concentration (n) and Fermi level (E_F) in semiconductors

$$n = N_C \exp(-\frac{E_C - E_F}{kT}) \quad \text{(S1)}$$

$$E_C - E_F = E_g - VBM \quad \text{(S2)}$$

where k, T are the Boltzmann constant and temperature, E_C, E_g and N_c are conduction band level, band gap and effective state density of conduction band, respectively. According to **Equation S1** and **S2**, n becomes smaller as VBM becomes smaller.

References

1. S. M. Sze, *Physics of Semiconductor Devices*, 2nd ed (Wiley, New York, **1981**).
2. E. A. Kraut, R. W. Grant, J. R. Waldrop, S. P. Eowalczyk, *Phys. Rev. Lett.* **1980**, 44, 1620.

Part II: Supplementary Figures

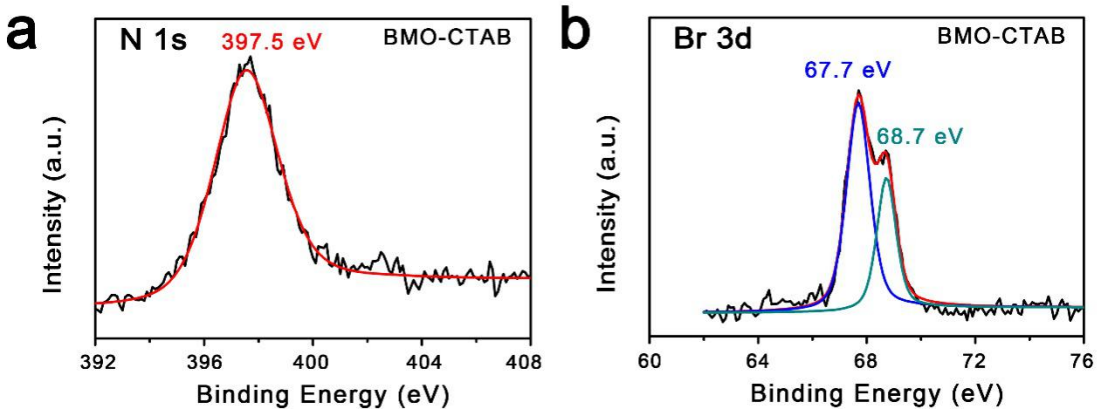

Figure S1. N 1s (a) and Br 3d (b) spectra of the BMO-CTAB, respectively.

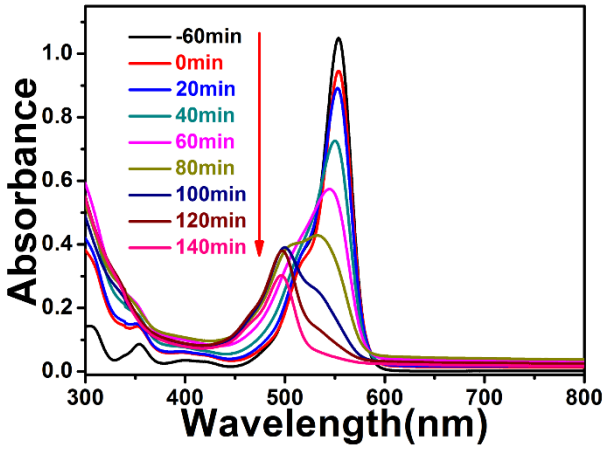

Figure S2. UV-visible spectra of rhodamine B (RhB) solution with time over BMO-TCD under visible light.

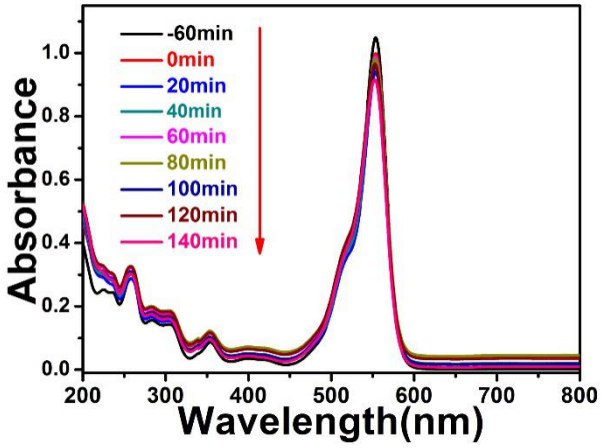

Figure S3. UV-visible spectra of rhodamine B (RhB) solution with time over BMO-GLU under visible light.

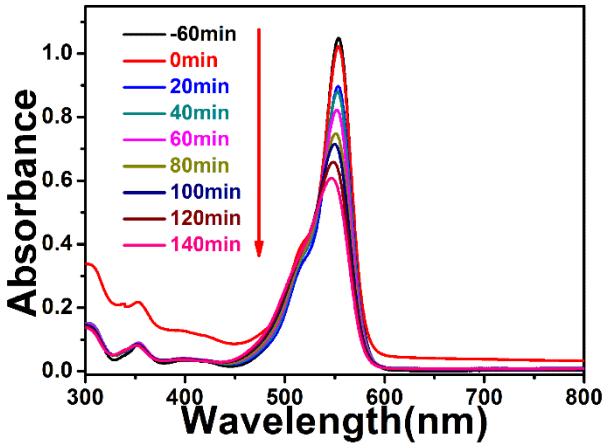

Figure S4. UV-visible spectra of rhodamine B (RhB) solution with time over BMO-SDS-1 under visible light.

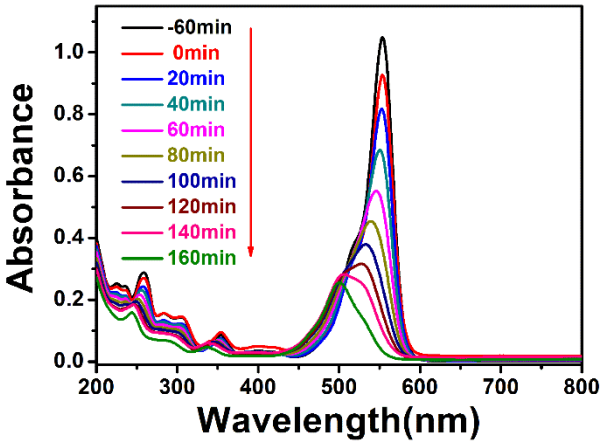

Figure S5. UV-visible spectra of rhodamine B (RhB) solution with time over BMO-SDS-2 under visible light.

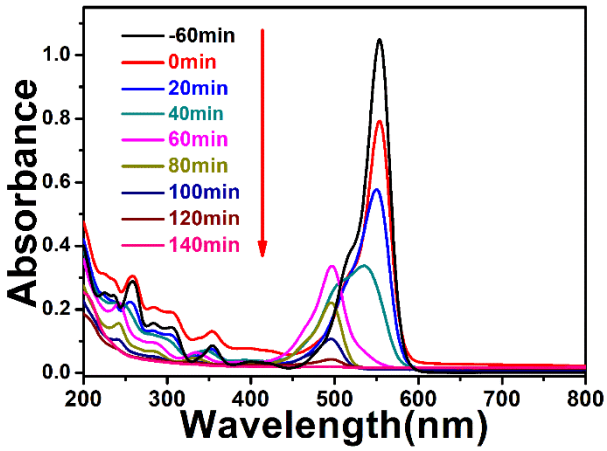

Figure S6. UV-visible spectra of rhodamine B (RhB) solution with time over BMO under visible light.

Part III: Table

Table S1 The atomic percentage of each element of the BMO-CTAB sample, measured by XPS.

Element	Bi	Mo	O	N	Br
Atomic percentage (%)	12.09	5.28	34.06	18.25	3.99