

## Supporting Information

Promoting Photocatalytic Conversion of Carbon Dioxide to Methanol of Molybdenum  
Dioxide by Sodium Species

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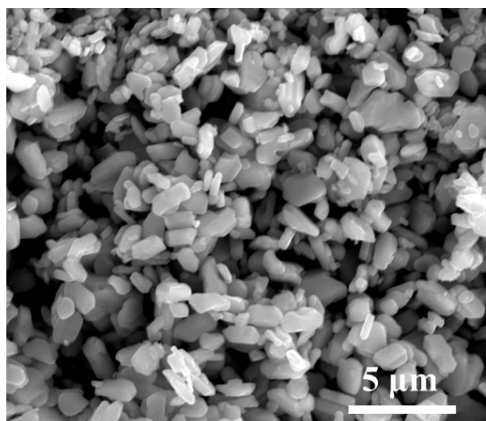
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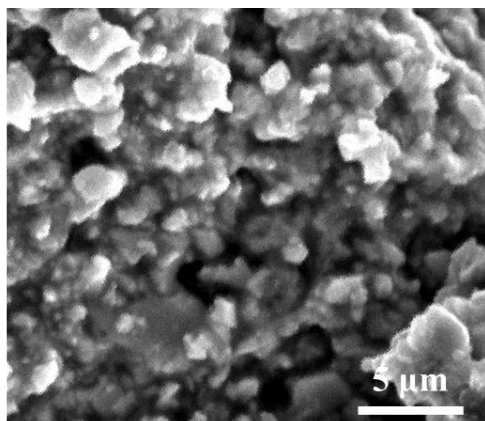
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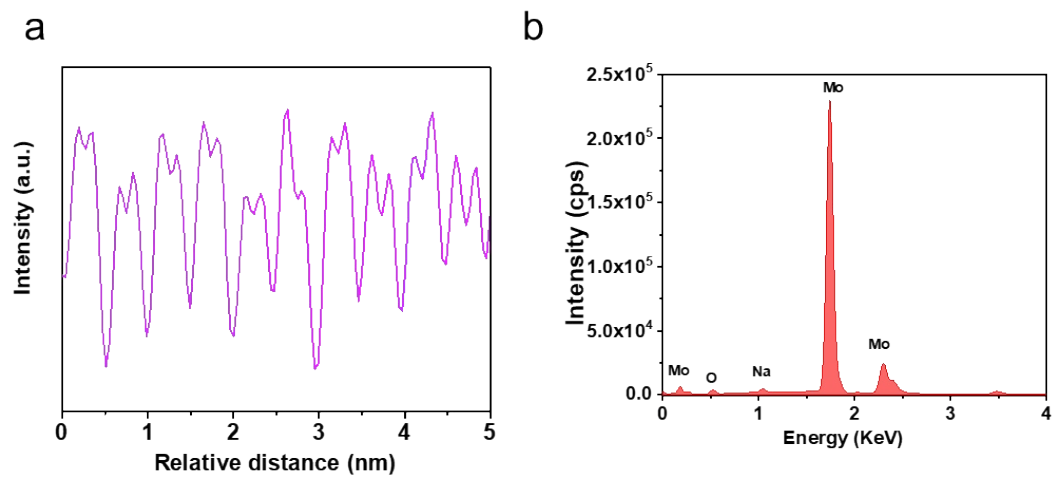
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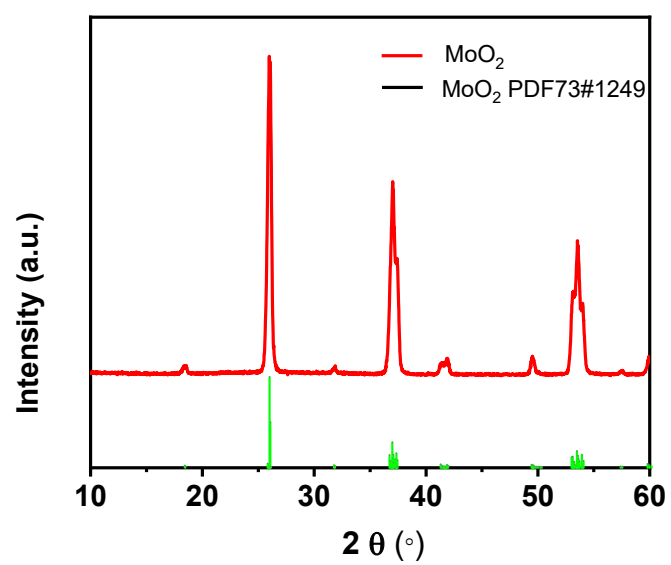
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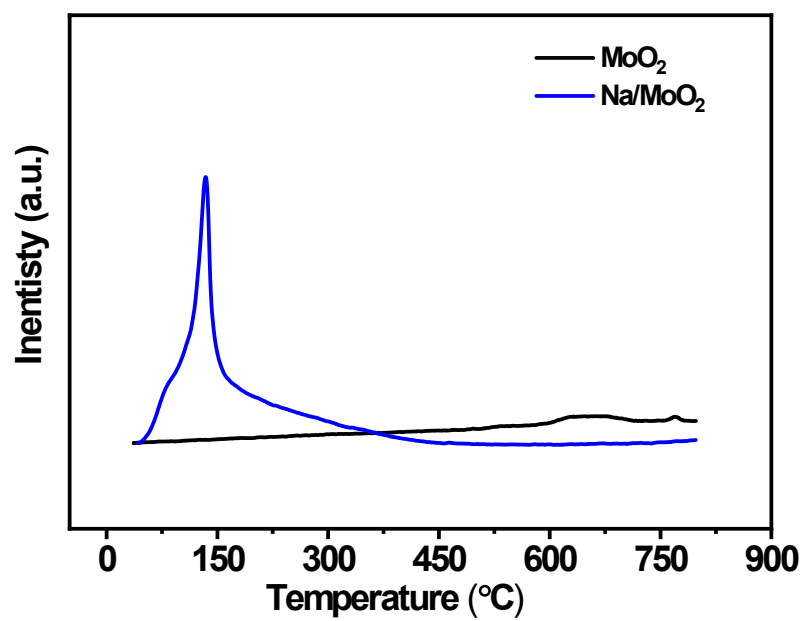
**Figure S1.** SEM image of (a) MoO<sub>3</sub>, (b)Na/MoO<sub>2</sub>.



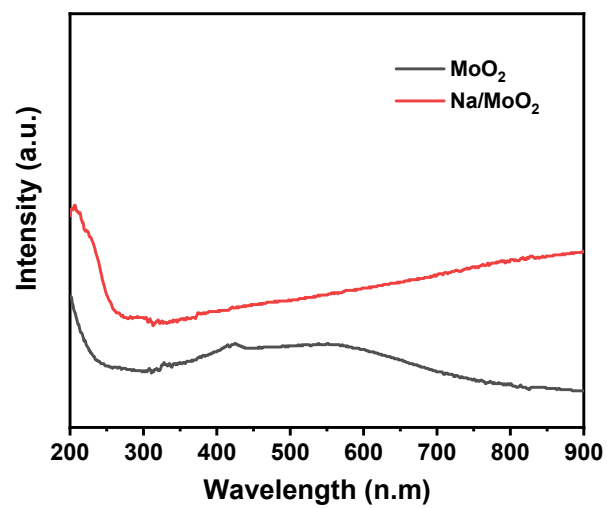
**Figure S2.** (a) height profile of marked line in Figure 1a. (b) EDS spectra of Na/MoO<sub>2</sub>.



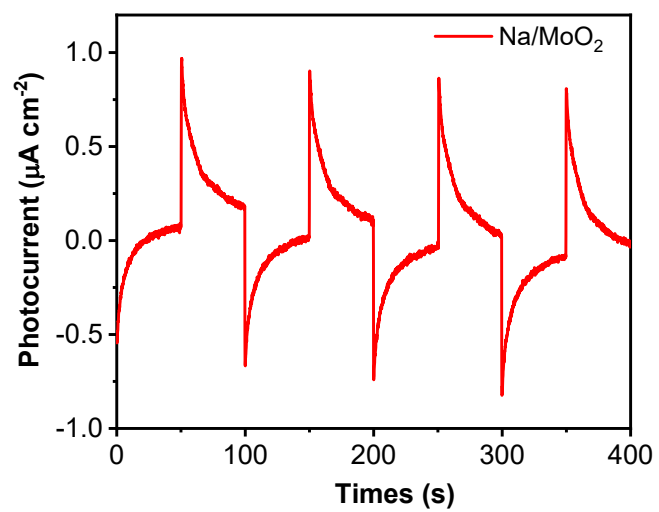
**Figure S3.** XRD profile of MoO<sub>2</sub>.



**Figure S4.** CO<sub>2</sub>-TPD curves of MoO<sub>2</sub> and Na/MoO<sub>2</sub>.



**Figure S5.** UV-vis diffuse reflectance spectra of MoO<sub>2</sub> and Na/MoO<sub>2</sub> sample.



**Figure S6.** Time-dependent photocurrent curves (i-t curve) Na/MoO<sub>2</sub>.

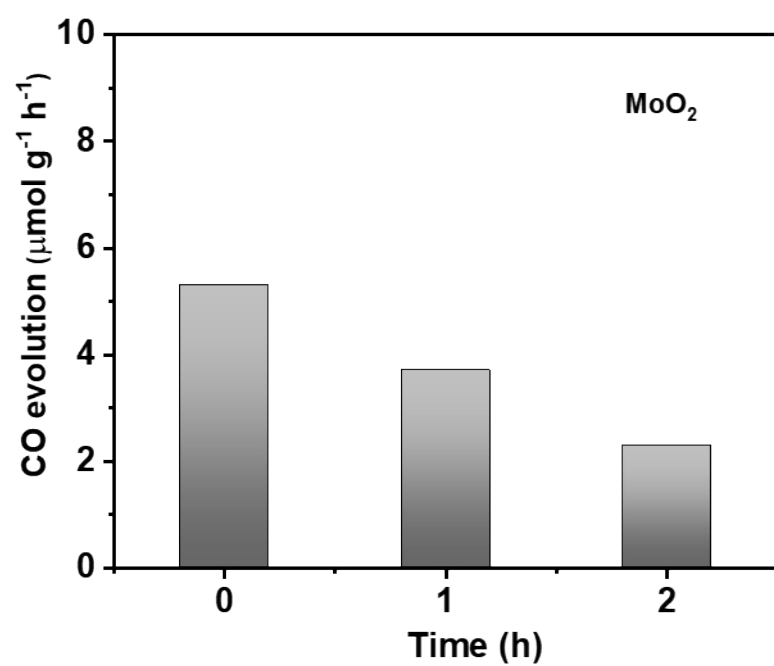
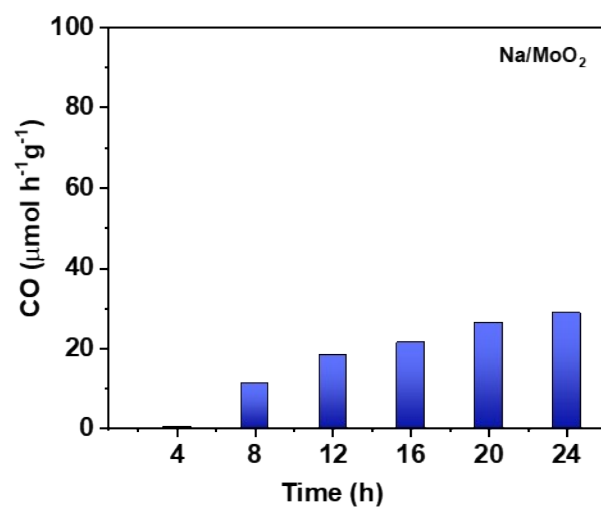
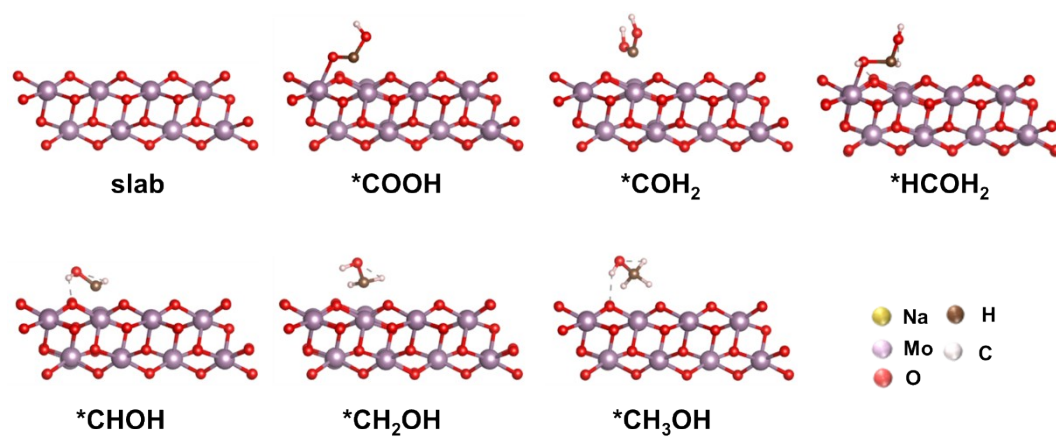


Figure S7. CO production over MoO<sub>2</sub> for 2 h.





**Figure S8.** (a) CO production over Na/MoO<sub>2</sub> for 24 h.



**Figure S9.** Structure model of adsorption intermediates on MoO<sub>2</sub> for every reaction step in CO<sub>2</sub> photocatalytic converting into CH<sub>3</sub>OH.