Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Photocatalytic one-pot alkylation of nitrobenzene with benzyl alcohol for precise synthesis of N-benzylidenaniline over F-doped Bi_2MoO_6 nanosheets

Guangcheng Zou, [a] Rui Cao, [a] Conghui Cui,[a] Yuqiang Luo,[a] Chen Huang, [a] Xinwei Cui, [a] zhiwen wang, [a] Yujie Song [a*]

[a] Hainan Provincial Key Laboratory of Fine Chemicals, Hainan University, Haikou 570228, P. R. China.

*Corresponding authors.

E-mail addresses: songyujie@hainanu.edu.cn

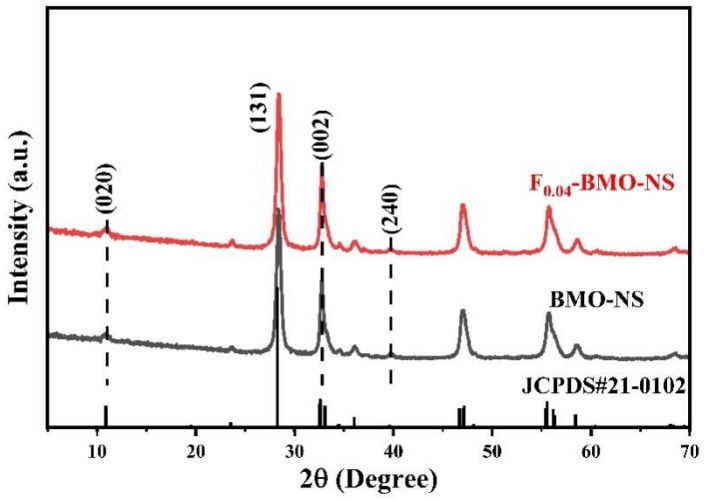

Fig. S1. XRD patterns of $F_{0.04}$-BMO-NS and BMO-NS

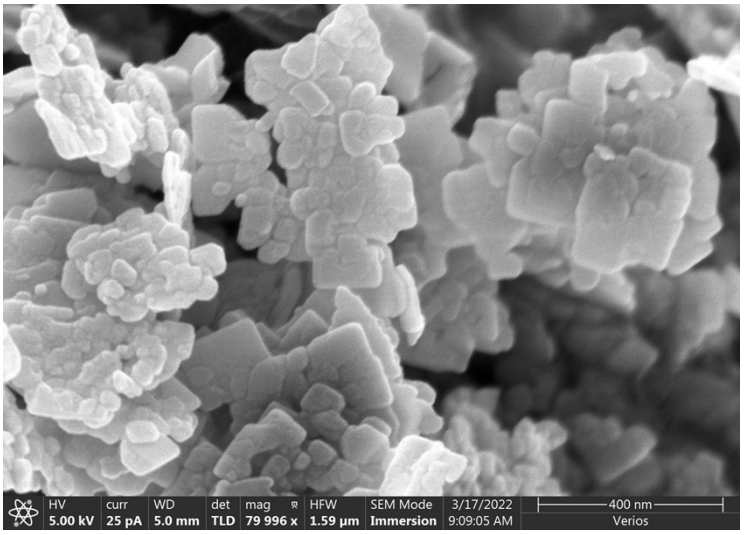

Fig. S2. The SEM image of the prepared $F_{0.04}$-BMO-B sample.

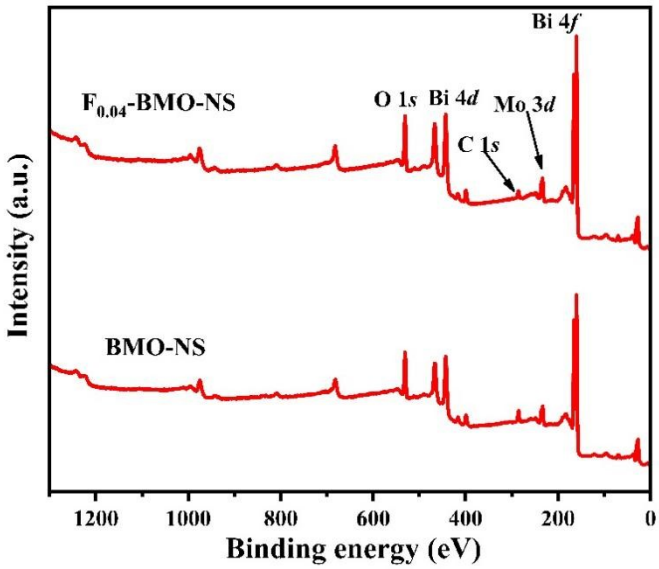

Fig. S3. XPS survey of the prepared $F_{0.04}$-BMO-NS and BMO-NS samples

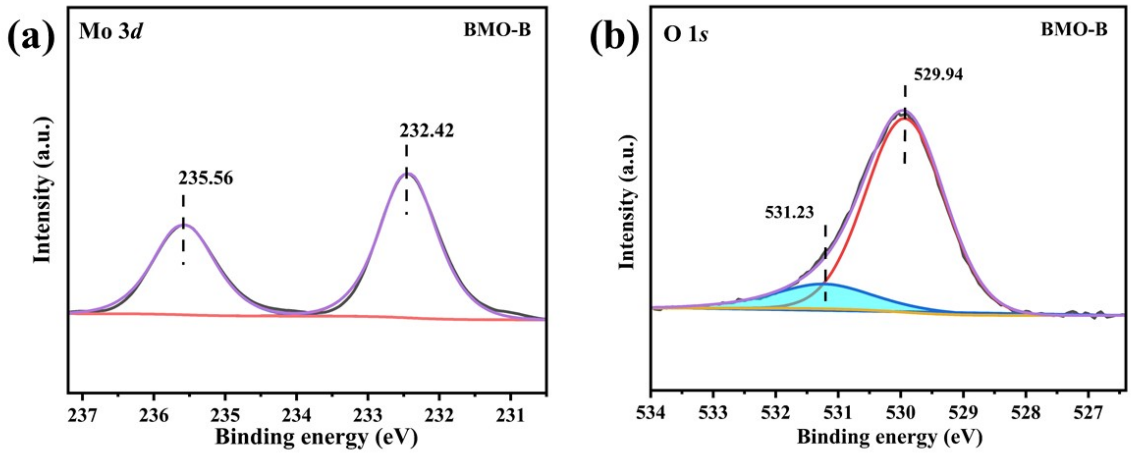

Fig. S4. XPS spectra of the BMO-bulk sample for (a) Mo 3*d* and (b) O 1*s*

Samples	Peak	Assignment	Fraction (%)
BMO-NS	Mo 3*d*	Mo^{5+}	5.9
		Mo^{6+}	94.1
$F_{0.04}$-BMO-NS	Mo 3*d*	Mo^{5+}	11.3
		Mo^{6+}	88.7
BMO-NS	O 1*s*	Bridging oxygen	20
		Lattice oxygen	80
$F_{0.04}$-BMO-NS	O 1*s*	Bridging oxygen	10
		Lattice oxygen	90

Table. S1. XPS fitting results for the prepared BMO-NS and $F_{0.04}$-BMO-NS.

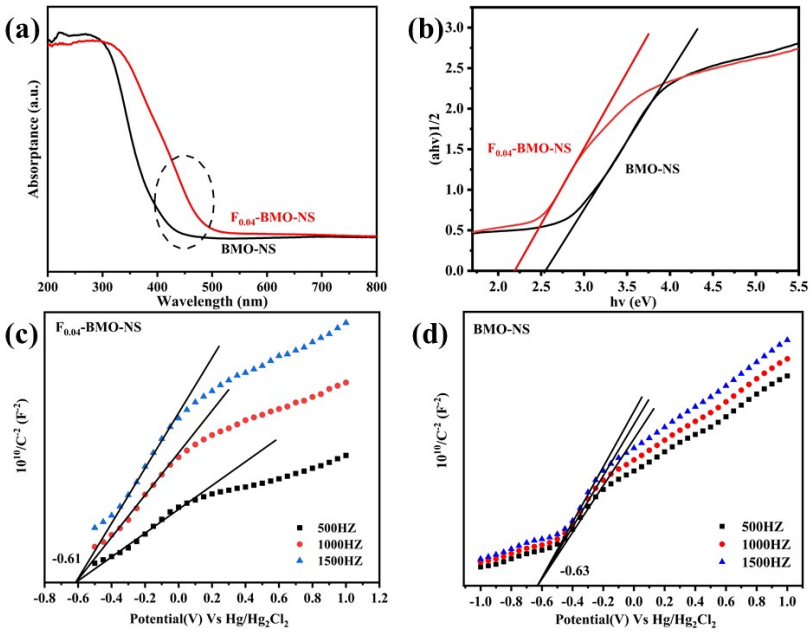

Fig. S5. (a-b) UV–vis DRS spectra and (FR)0.5 as a function of photonenergy (hv). (c-d) Mott-Schottky plots of BMO-NS and $F_{0.04}$-BMO-NS.

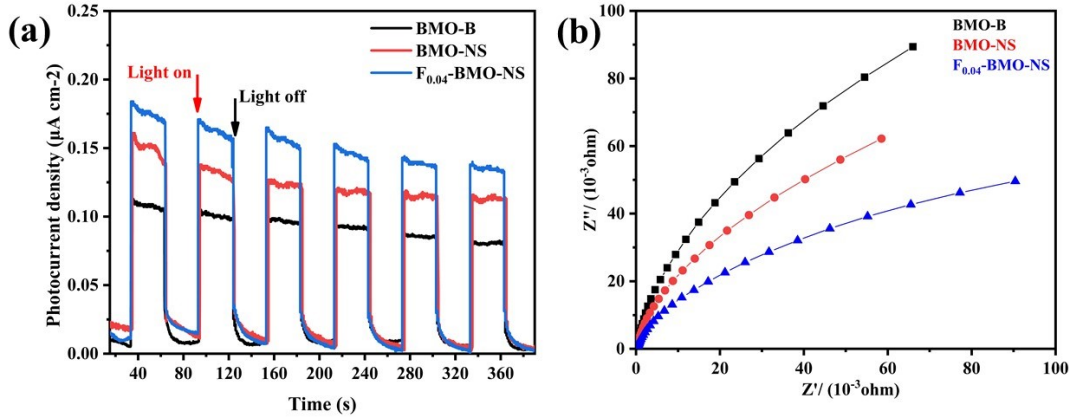

Fig. S6. (a) photocurrent responses of prepared samples and (b) Nyquist impedance plots.

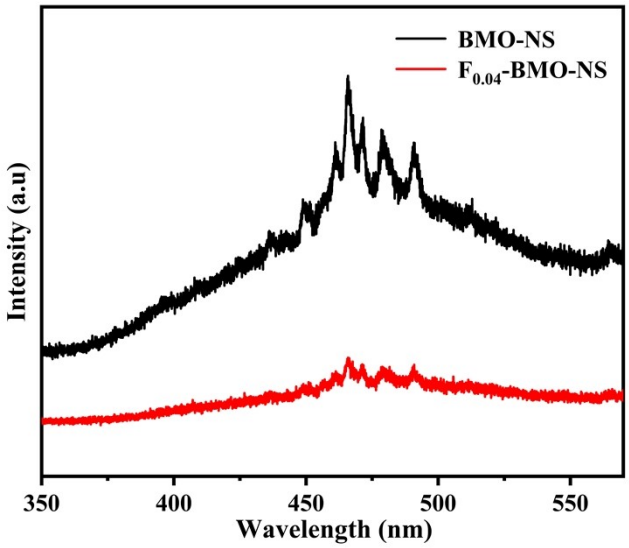

Fig. S7 Photoluminescence spectra of $F_{0.04}$-BMO-NS and BMO-NS

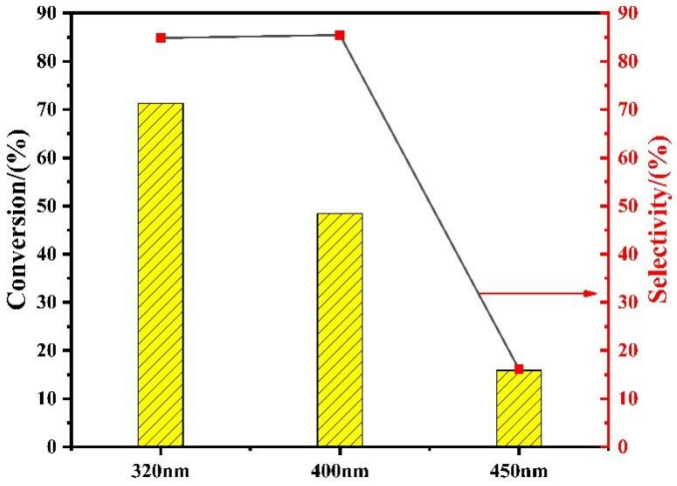

Fig. S8. Photocatalytic performances of the $F_{0.04}$-BMO-NS under irradiation of various light wavelength. Reaction conditions: nitrobenzene (0.2 mmol), catalyst (10 mg), benzyl alcohol (1.5 mL), N_2 (1 atm), irradiation time (4 h).

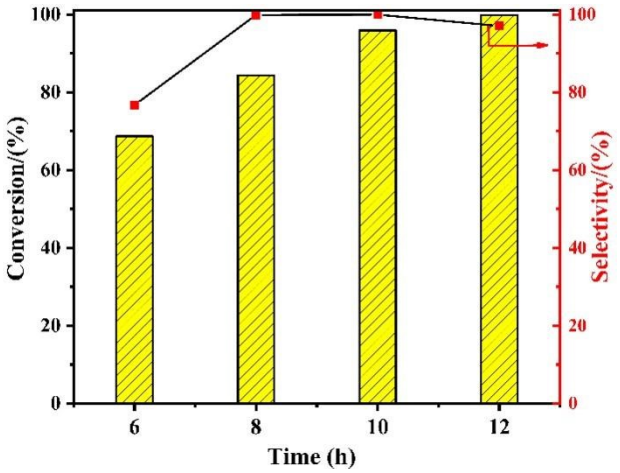

Fig. S9. Reaction time on $F_{0.04}$-BMO-NS for the selective photo-alkylation of benzyl alcohol with nitrobenzene to imine

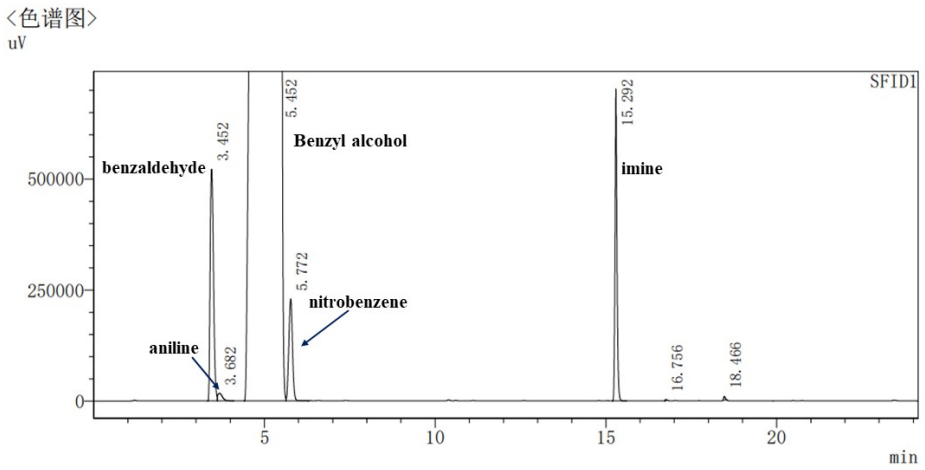

Fig.S10 Chromatogram for the products of 0.2 mmol nitrobenzene reacting with 1.5 ml benzyl alcohol for 6 h

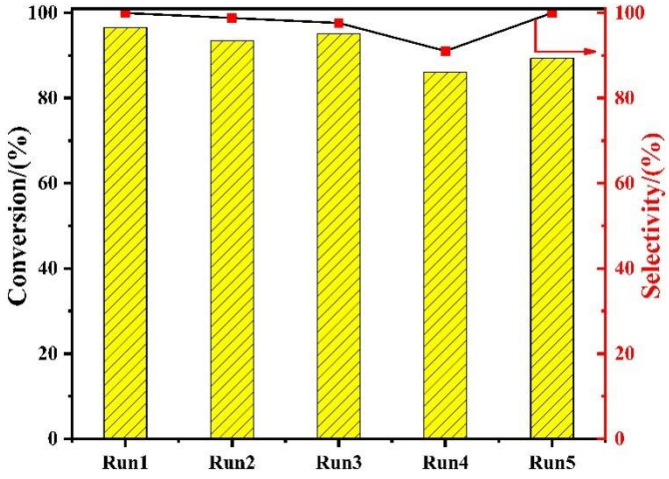

Fig. S11. Cycling test for photo-alkylation of benzyl alcohol with nitrobenzene to imine over $F_{0.04}$-BMO-NS.

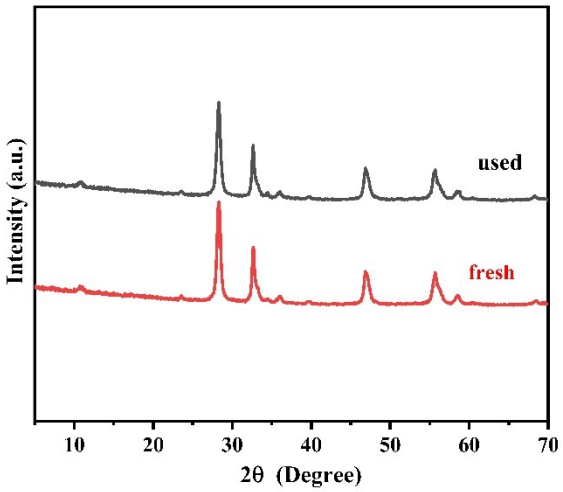

Fig. S12. XRD patterns of $F_{0.04}$-BMO-NS before and after five photocatalytic reactions.