Electronic Supplementary Information

for

Highly efficient visible-light-induced photocatalytic hydrogenation of nitrobenzene to aniline in water

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Experimental section

1. GC-MS analysis

The presence of nitrobenzene and aniline was detected by GC-MS. Prior to GC-MS analysis, 100 mg NaCl (A.R., SCRC) and 15 mg Na_2SO_3 (A.R., SCRC) were dissolved in 5 mL of the reaction solution. Then, 5 mL of ethyl acetate (A.R., SCRC) was added into this aqueous solution. After shaking for 10 min and stood for 2 min, 1 mL of the organic phase was moved to a sample vial (2mL) for GC-MS analysis. GC-MS analysis was carried out by using a Hewlett Packard 6890 apparatus equipped MSD 5973 detector. The GC was fitted with a HP-5 MS capillary column (30 m × 250 μm; film thickness: 0.25 μm). The temperature program was as follows: injector temperature 250 ^{o}C, initial oven temperature 2.5 min at 45 ^{o}C, then 10 $^{o}C/min$ to 180 ^{o}C, final time was 5 min at 180 ^{o}C. Transfer line temperature was 280 ^{o}C. Helium was used as carried gas at 2.2 psi pressure with a flow of 0.6 mL/min and electronic pressure control on. 5 μL of the sample was injected automatically. MS spectra of separated components were compared with ones from NIST98 MS database.

Fig. S1 (a) TEM and (b) high-resolution TEM images for the Bi_2MoO_6 sample.

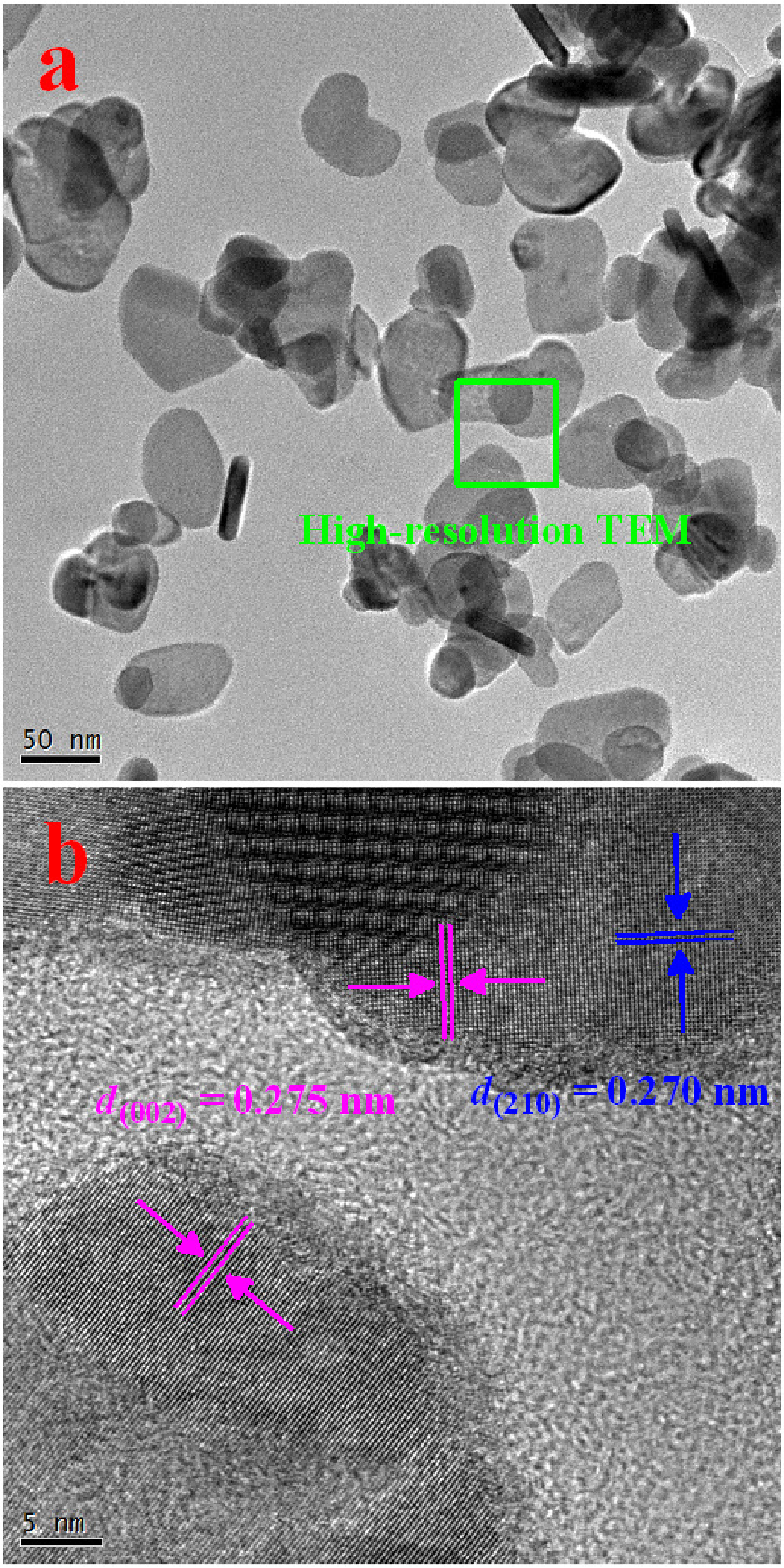


Fig. S2 Liner relationship between the concentration (*C*) and the absorbance (*A*) at 229 nm for aniline.

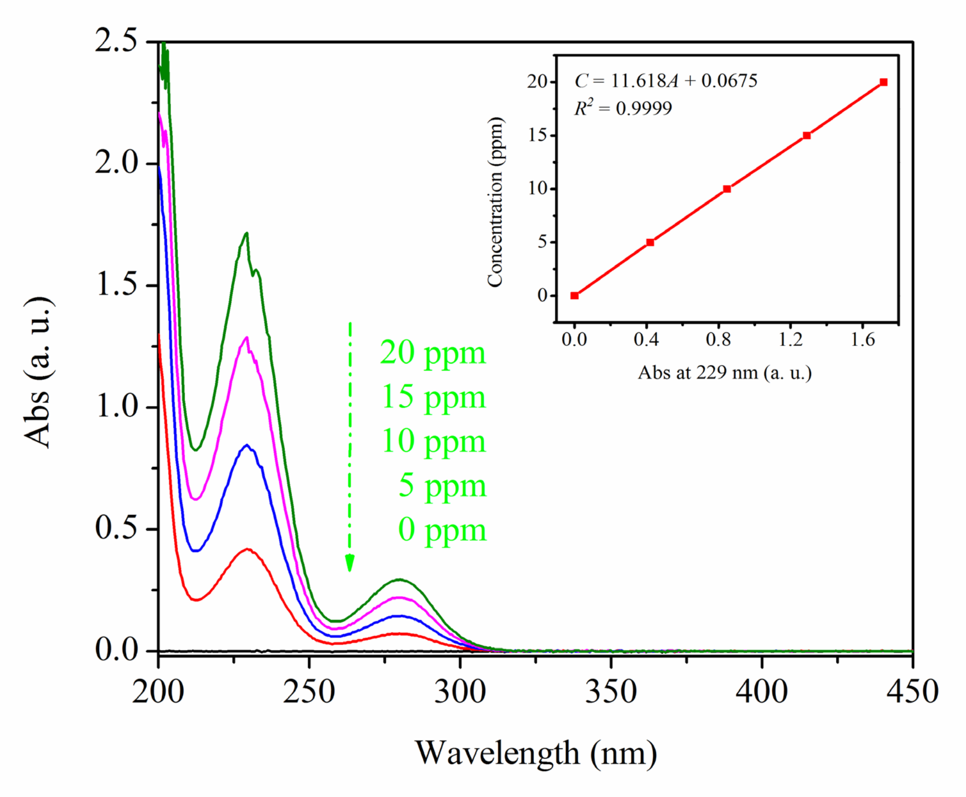
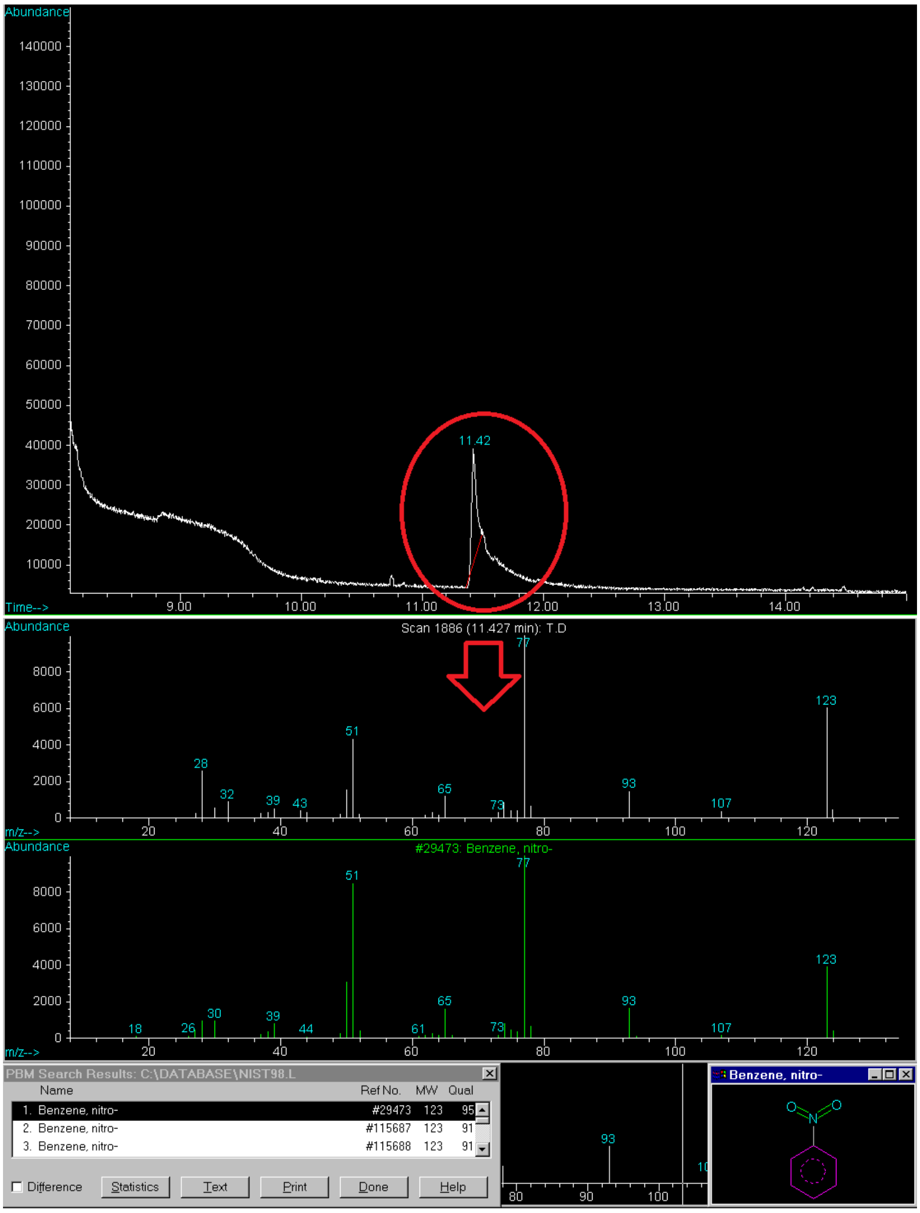
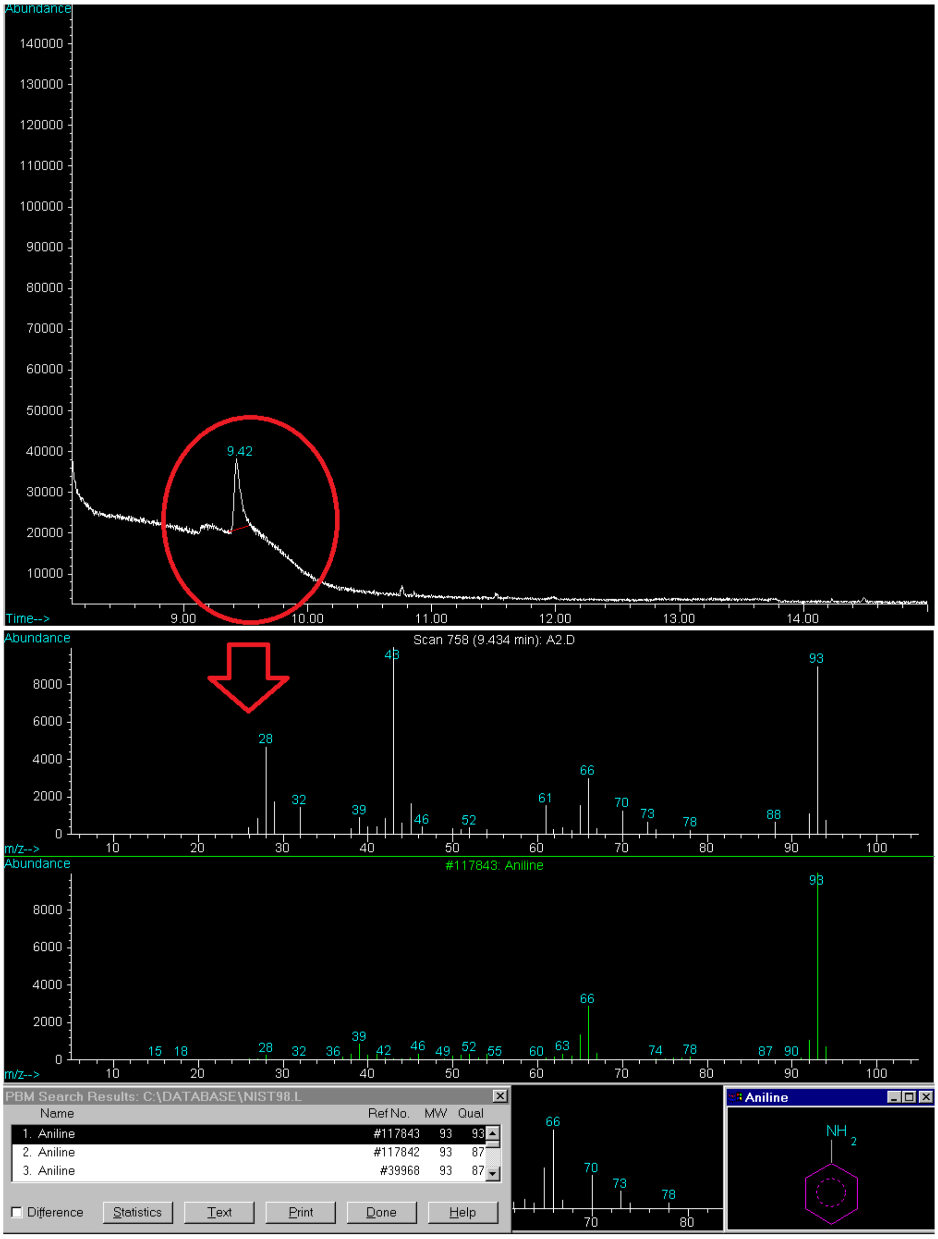


Fig. S3 GC-MS spectra of the nitrobenzene aqueous solution before the reaction.



	Name	Ref No.	MW	Qual
1.	Benzene, nitro-	#29473	123	95
2.	Benzene, nitro-	#115687	123	91
3.	Benzene, nitro-	#115688	123	91

Fig. S4 GC-MS spectra of the nitrobenzene aqueous solution after the reaction.



PBM Search Results: C:\DATABASE\NIST98.L

Name	Ref No.	MW	Qual
1. Aniline	#117843	93	93
2. Aniline	#117842	93	87
3. Aniline	#39968	93	87

Fig. S5 Photocatalytic hydrogenation of nitrobenzene over the TiO_2 photocatalyst under UV light irradiation ($\lambda \geq 300$ nm) in the presence of (a) HCO_2NH_4 and (b) $(NH_4)_2C_2O_4$.

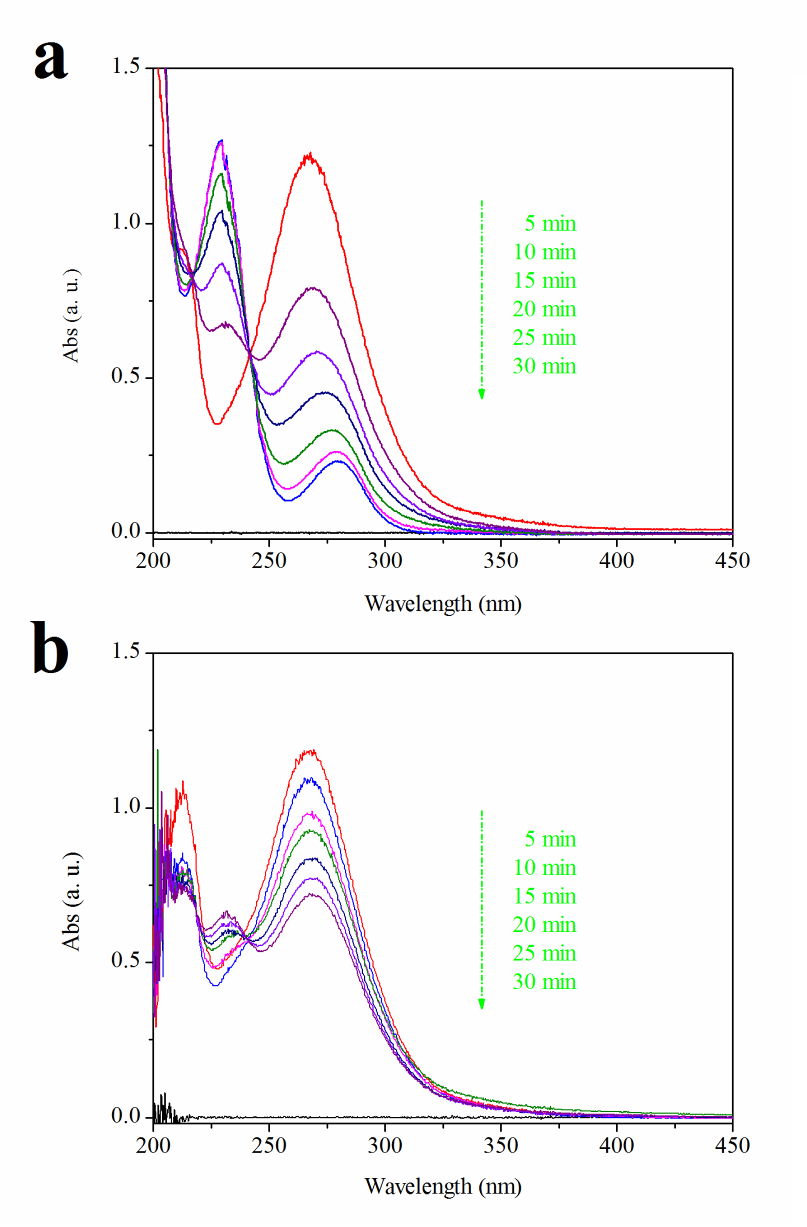


Fig. S6 XRD patterns of the Bi_2MoO_6 photocatalyst before and after the reaction.

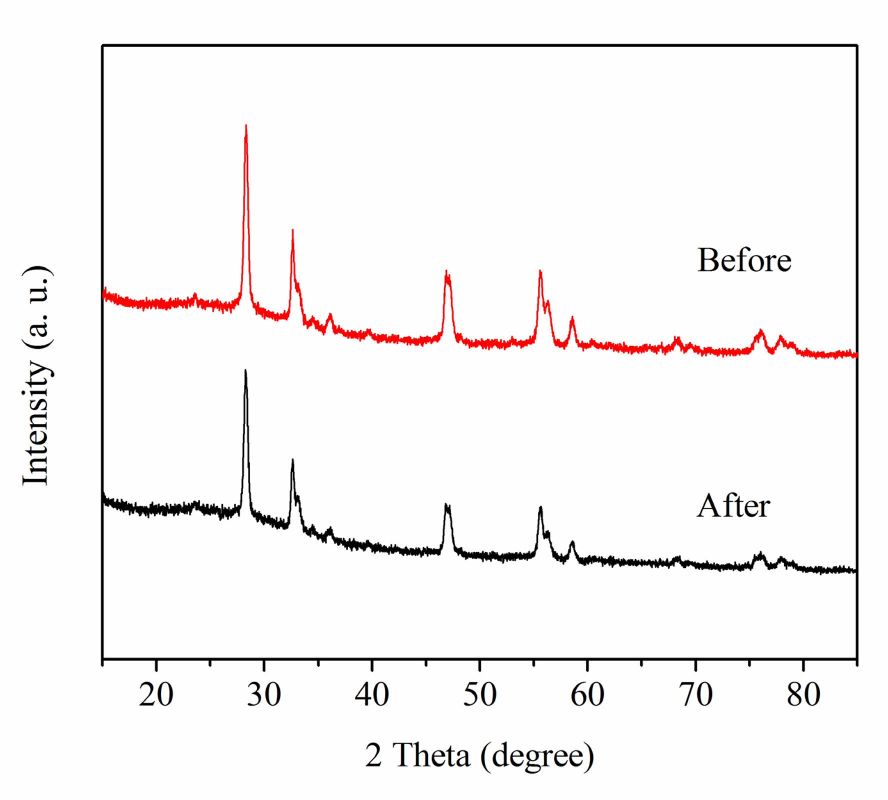


Fig. S7 Photocatalytic hydrogenation of nitrobenzene over the Bi_2MoO_6 photocatalyst in the presence of $(NH_4)_2C_2O_4$ as the hole scavenger without N_2 atmosphere.