Electronic supplementary information (ESI)

A highly selective conversion of toxic nitrobenzene to nontoxic aminobenzene by $Cu_2O/Bi/Bi_2MoO_6$

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ESI: Fig. S1

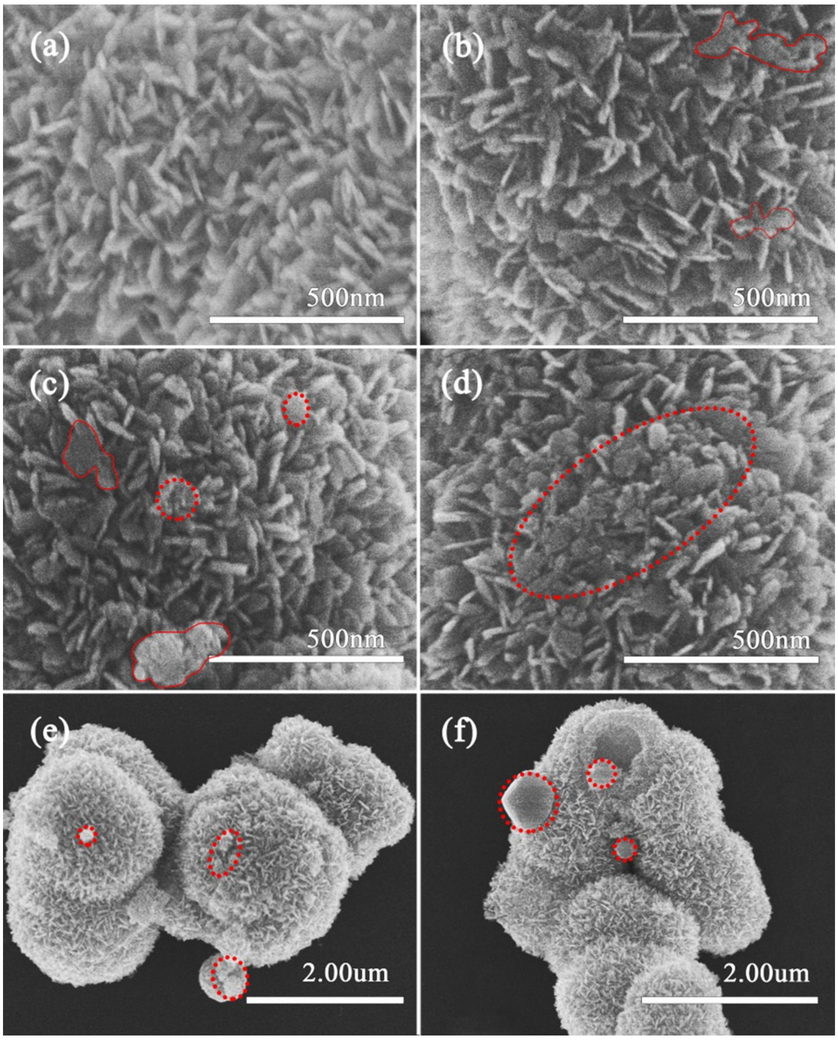
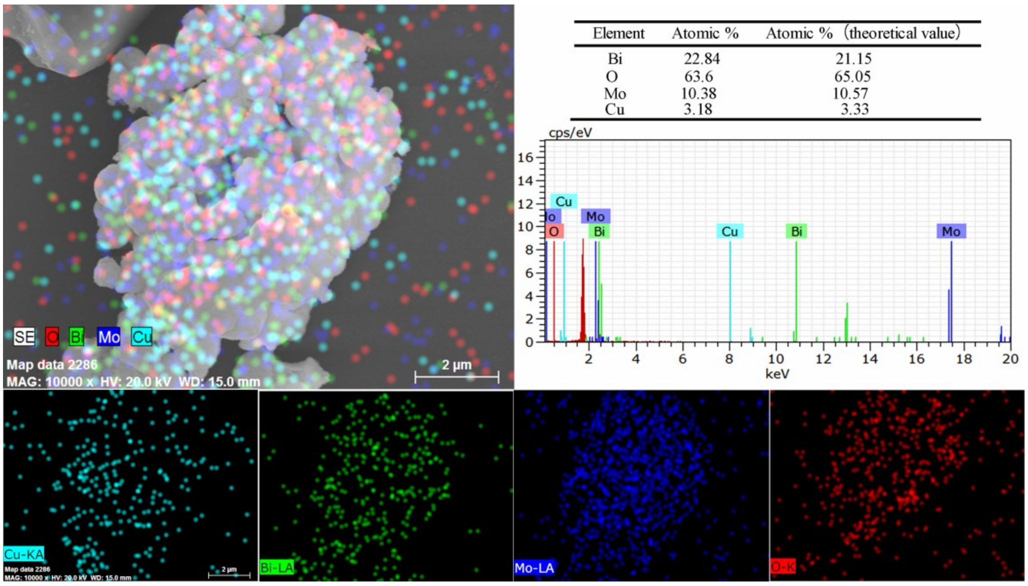


Fig.S1 SEM images of (a) pure Bi_2MoO_6 (BM), (b) CB-1, (c) CB-2, (d) CB-3, (e) CB-4 and (f) CB-5. And the red selected area represents Cu_2O.

ESI: Fig. S2



Element	Atomic %	Atomic %（theoretical value）
Bi	22.84	21.15
O	63.6	65.05
Mo	10.38	10.57
Cu	3.18	3.33

Fig. S2 The energy-dispersive X-ray spectrum and map scanning of CB-2 nanocomposite from SEM.

ESI: Fig. S3

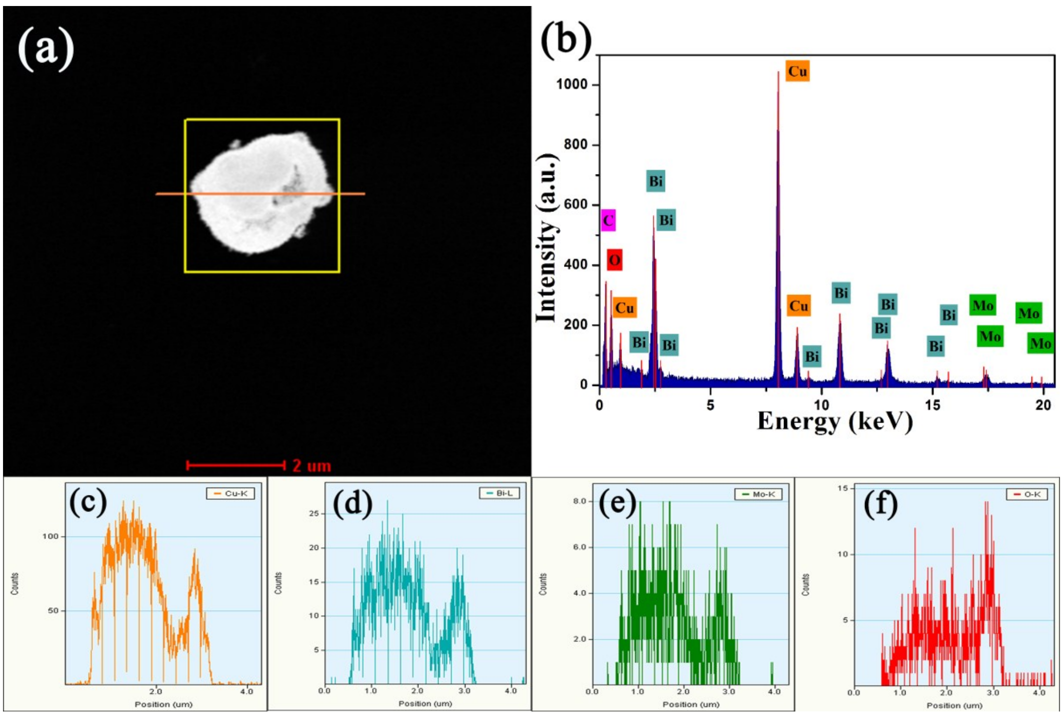


Fig. S3 The scanning transmission electron microscope (STEM) (a), Energy-dispersive X-ray microanalysis (EDX) (b), and line scanning (c-f) along the red arrow direction in Figure 3a for the separated elements.

ESI: Fig. S4

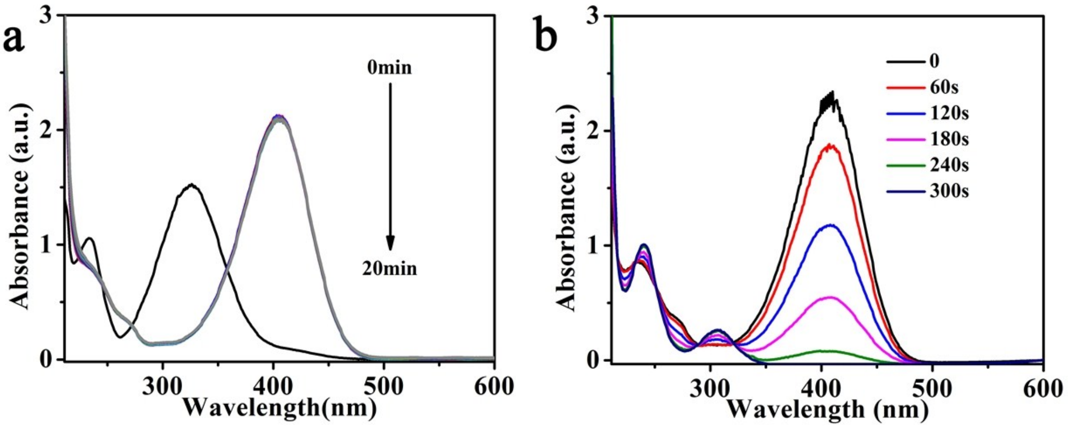


Fig. S4 UV-vis absorption spectra for the catalytic reduction of 4-NP over (a) $NaBH_4$ and 4-NP alone , (b) pure Cu_2O.

ESI: Fig. S5

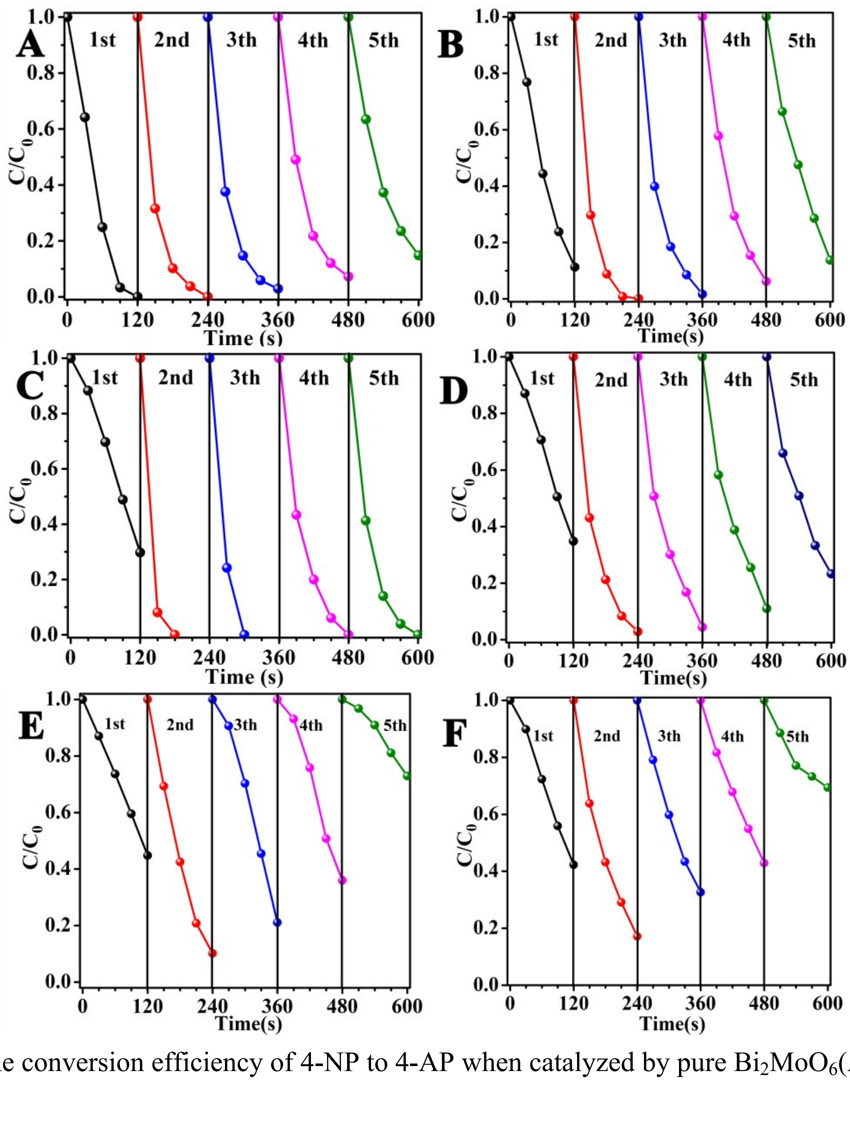


Fig. S5 The conversion efficiency of 4-NP to 4-AP when catalyzed by pure Bi_2MoO_6(A), CB-1(B), CB-2(C), CB-3(D), CB-4(E) and CB-5(F) for the different runs over a reactive time of 2 min.

ESI: Fig. S6

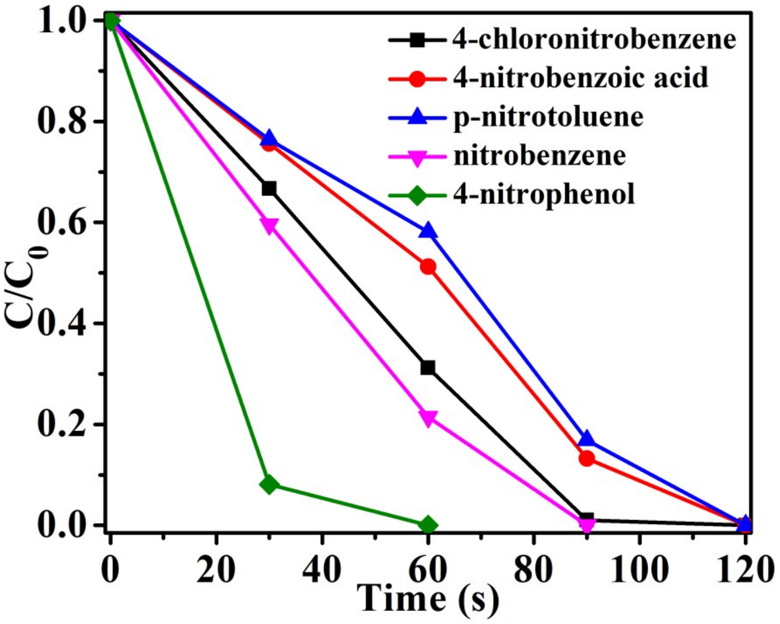


Fig. S6 The profile of the conversion efficiency vs. time during the catalytic reduction of 4-chloronitrobenzene, 4-nitrobenzoic acid, p-nitrotoluene, nitrobenzene and 4-nitrophenol over CB-2.

ESI: Fig. S7

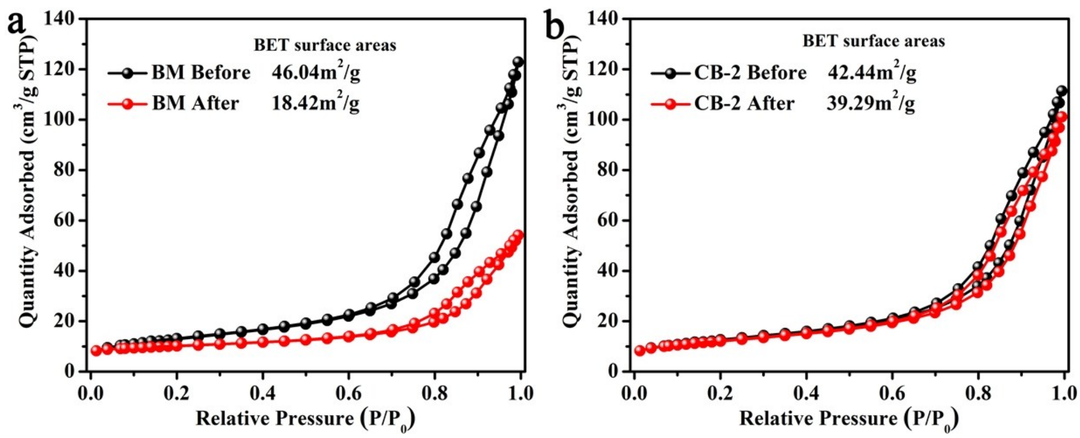


Fig. S7 Nitrogen adsorption-desorption isotherms of BM (a) and CB-2 (b).

ESI: Fig. S8

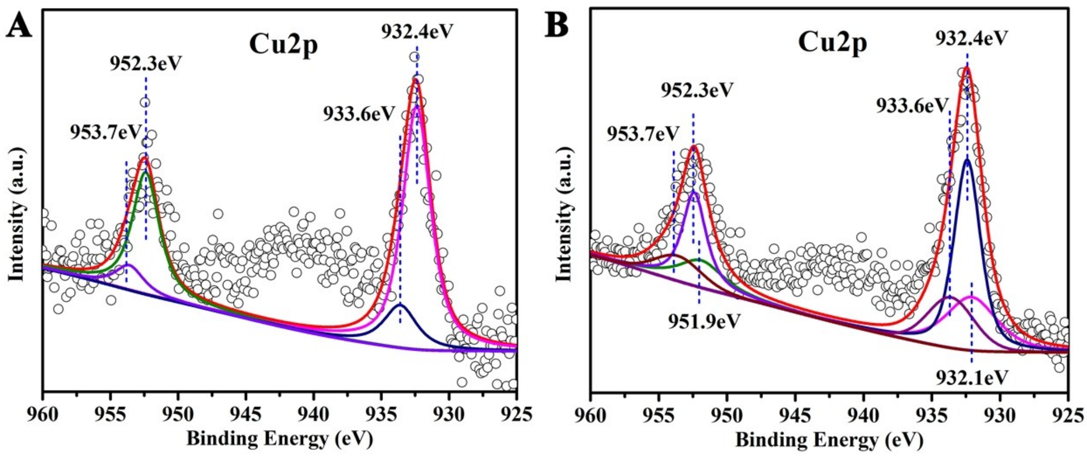


Fig. S8 The XPS spectra of Cu2p for a fresh CB-2 (A) sample; XPS spectra of Cu2p for a used CB-2 (B) sample.

ESI: Table S1 Reaction rate constant of BM, CB-1, CB-2, CB-3, CB-4, CB-5 and Cu_2O.

catalyst	**kapp($\times10^{-2}s^{-1}$)**	**kapp (min^{-1})**	**K($g^{-1}s^{-1}$)**	**Activity factor K($g^{-1}min^{-1}$)**
BM	3.655	2.193	73.1	4386
CB-1	5.785	3.471	115.7	6942
CB-2	8.378	5.0268	167.56	10053.6
CB-3	2.911	1.7466	58.22	3493.2
CB-4	1.922	1.1532	38.44	2306.4
CB-5	1.437	0.8622	28.74	1724.4

ESI: Table S2 Activity factor K of BM, CB-2 together with the catalysts reported in literatures.

Number	Catalysts	Activity factor $K (g^{-1} min^{-1})$	Literature
1	BM	4386	This work
2	CB-2	10053.6	This work
3	Ag supported halloysite nanotubes	5.22	Reference[1]
4	Bismuth Nanoparticles	1650.6	Reference[2]
5	Bi-Fe_3O_4@RGO	1482.6	Reference[3]
6	Au-loaded $Na_2Ta_2O_6$ Under solar light irradiation	2673.7	Reference[4]
7	Cu_2O–Cu–CuO nanocomposite	1248	Reference[5]
8	Cu NPs	4384.8	Reference[6]
9	9.6nm Ag	88.9	Reference[7]
10	Ag doped carbon spheres	101.4	Reference[1]
11	Ag/Fe oxide composite	105.5	Reference[8]
12	11.3nm Ag	116.7	Reference[7]
13	Fe_3O_4@SiO_2-Au@SiO_2 microspheres	116.7	Reference[9]
14	Polymer-supported Au nanoparticles	135.6	Reference[10]
15	AuNPs/NiSiO	975	Reference[11]
16	Spongy Au nanoparticles	21	Reference[12]
17	Ag/TiO_2 nanoparticles	389.7	Reference[13]
18	$Au_{180}(SC_6H_{13})_{100}$	3000	Reference[14]
19	Porous Cu-Au structures	1638	Reference[15]
20	$Au_{25}(SC_8H_9)_{18}$	5100	Reference[14]

ESI: Table S3 The atomic percentages of all elements in BM and CB-2 catalysts (both the fresh and the used samples) from the energy-dispersive X-ray spectra of SEM.

Element	**Atomic % BM**			**Atomic % CB-2**		
	Fresh	**Used**	**Theoretical value**	**Fresh**	**Used**	**Theoretical value**
Bi	22.8	57.42	22.22	22.84	22.88	21.15
O	70.76	6.39	66.67	65.6	65.34	65.05
Mo	6.43	36.19	11.11	8.38	8.14	10.57
Cu	--	--	--	3.18	3.64	3.33

References

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