Electronic Supplementary Information for the manuscript

In-Situ Fabrication of AgI/$AgVO_3$ Nanoribbon Composites with Enhanced Visible Photocatalytic Activity for Redox Reactions

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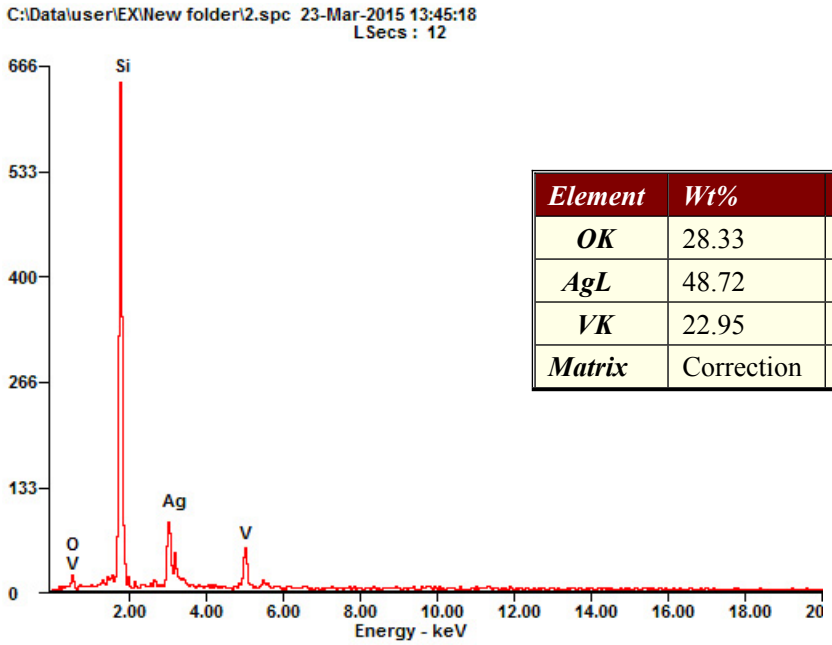
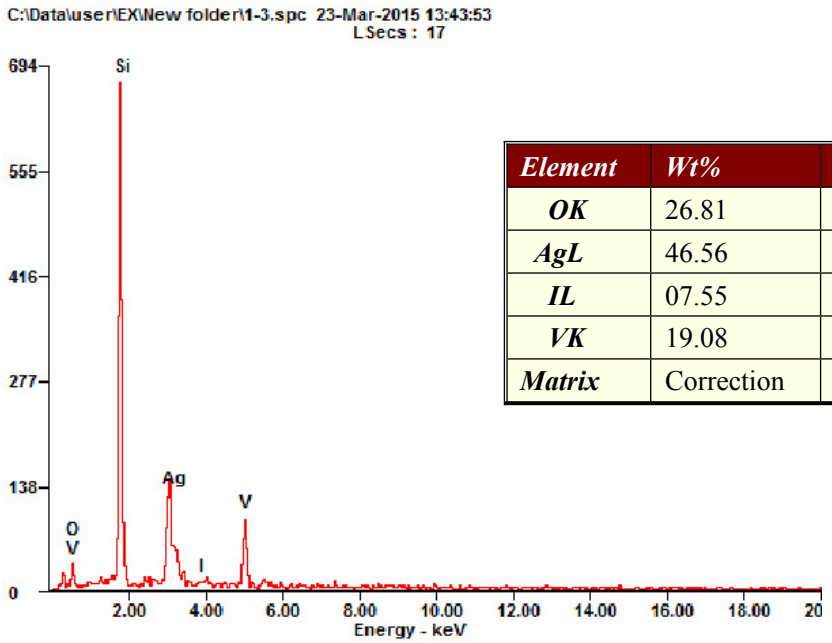
Fig. S1 SEM image of pure AgI.



Element	*Wt%*	*At%*
OK	28.33	66.28
AgL	48.72	16.88
VK	22.95	16.84
Matrix	Correction	ZAF

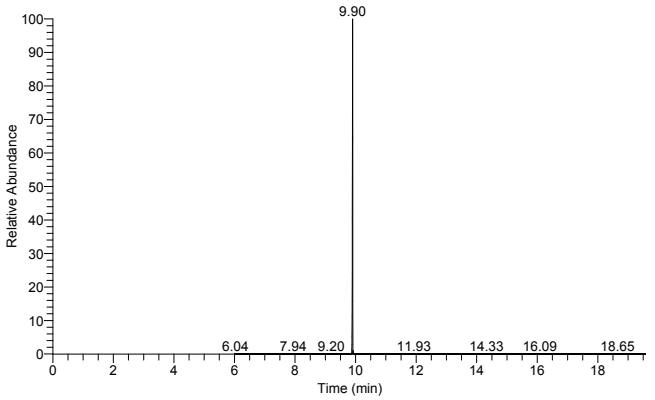


Element	*Wt%*	*At%*
OK	26.81	65.96
AgL	46.56	16.97
IL	07.55	02.34
VK	19.08	14.73
Matrix	Correction	ZAF

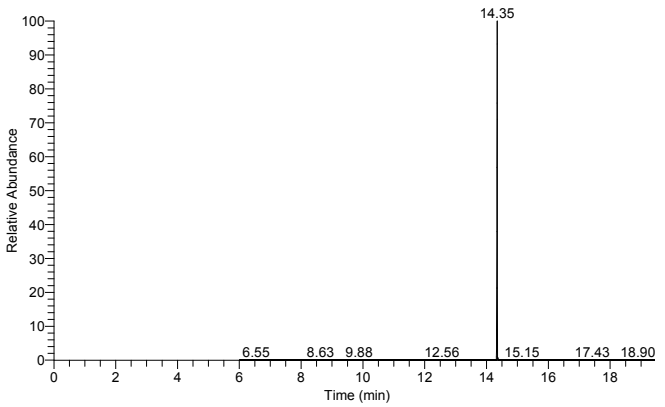
Fig. S2 EDX patterns of β-$AgVO_3$ nanoribbon and 30% AgI/$AgVO_3$ nanocomposite (the Si element is attributable to the Si foil).

Fig. S3 GC and GC-MS data for representative compounds in Table 2.

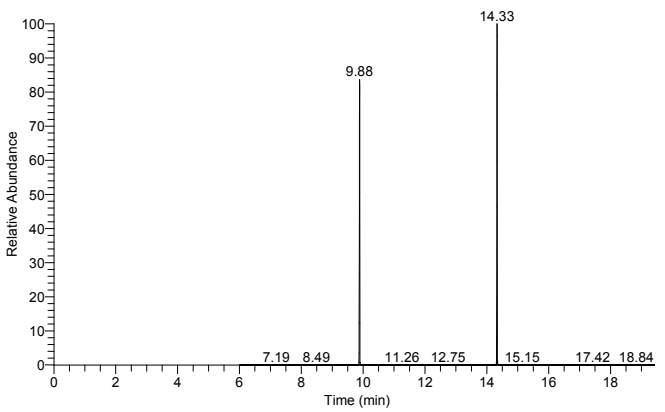
GC and GC-MS data for Entry 1 in Table 2.



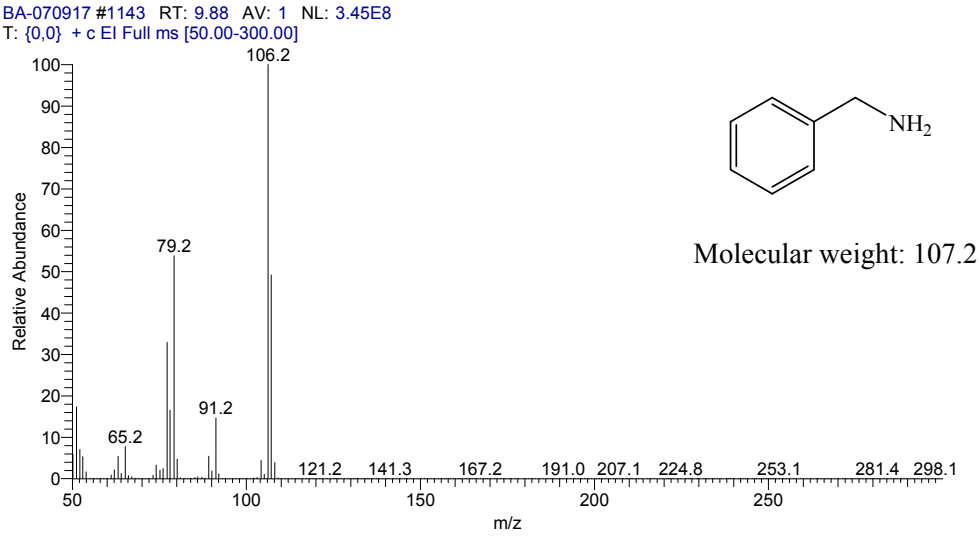
1a) GC spectrum of standard sample benzylamine.



1b) GC spectrum of standard sample N-benzylidenebenzylamine (product of benzylamine oxidation).

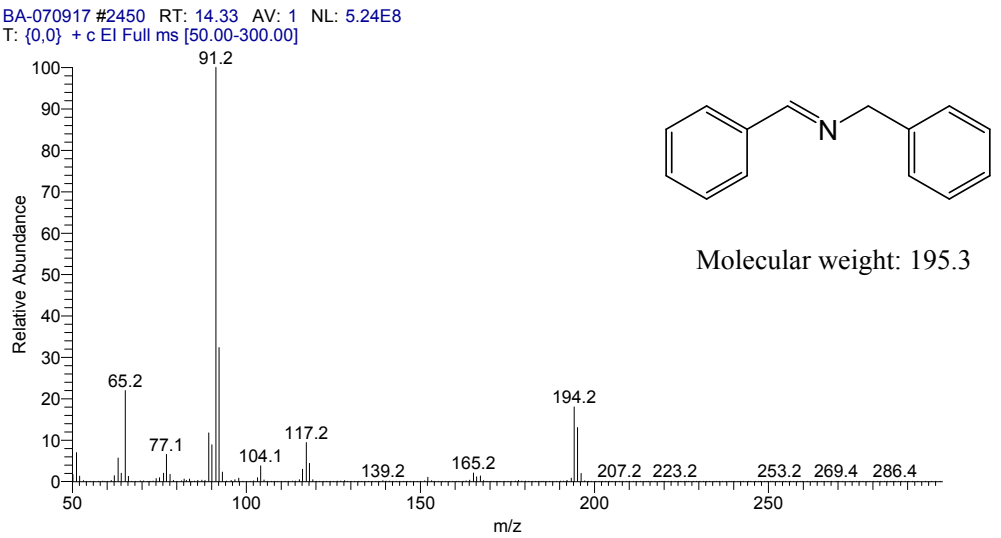


1c) GC spectrum of benzylamine oxidation (entry 1) after 6 h visible light irradiation.



Molecular weight: 107.2

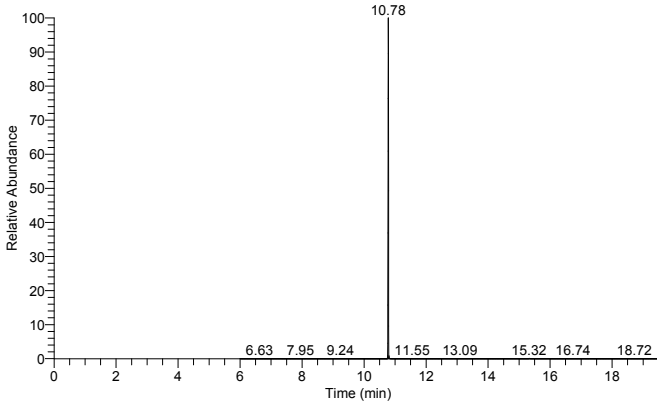
1d) MS data of the above Figure 1c.



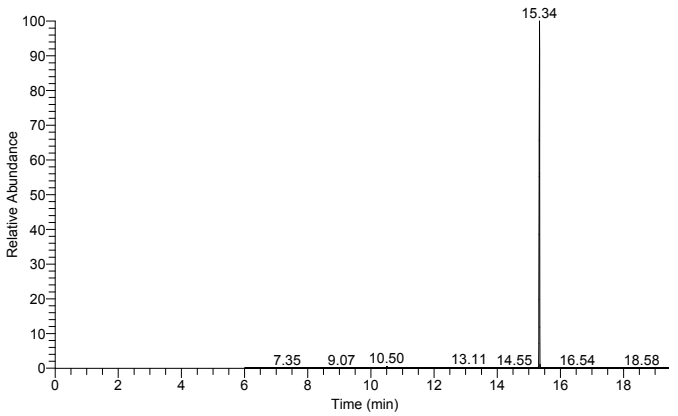
Molecular weight: 195.3

1e) MS data of the above Figure 1c.

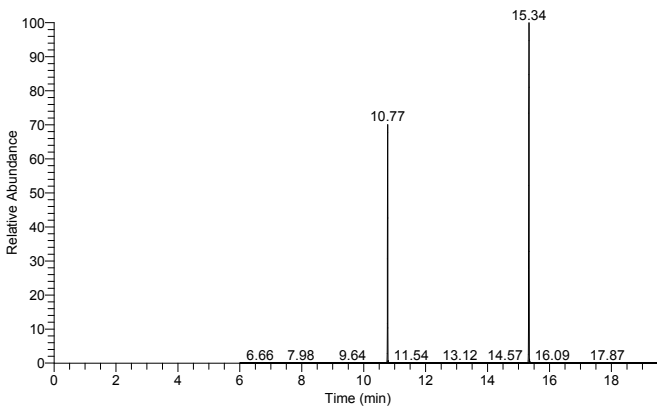
GC and GC-MS data for Entry 2 in Table 2.



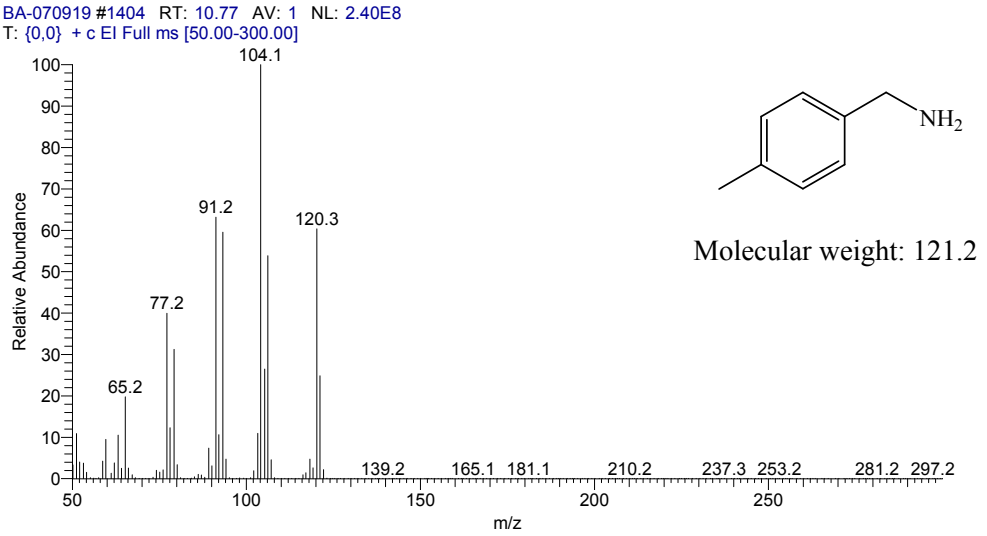
2a) GC spectrum of standard sample *p*-methyl-benzylamine.



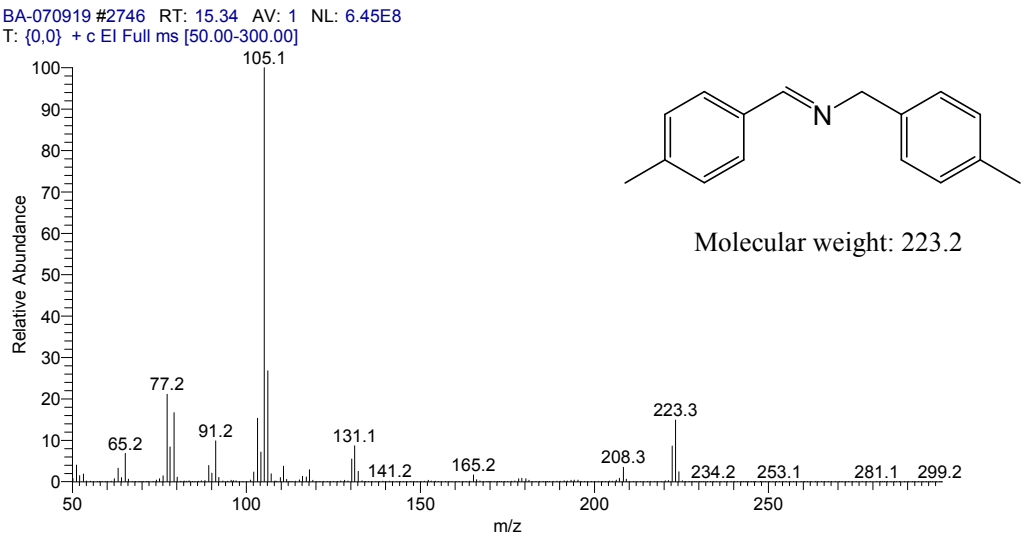
2b) GC spectrum of standard sample $CH_3C_6H_4CH{=}NCH_2C_6H_4CH_3$ (the product of *p*-methyl-benzylamine oxidation).



2c) GC spectrum of *p*-methyl-benzylamine oxidation (entry 2) after 5.5 h visible light irradiation.

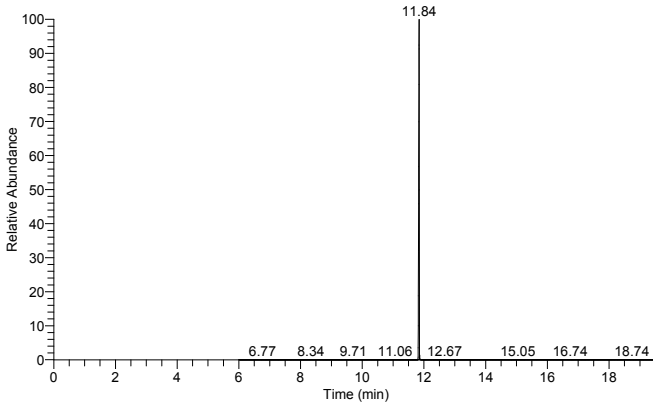


2d) MS data of the above Figure 2c.

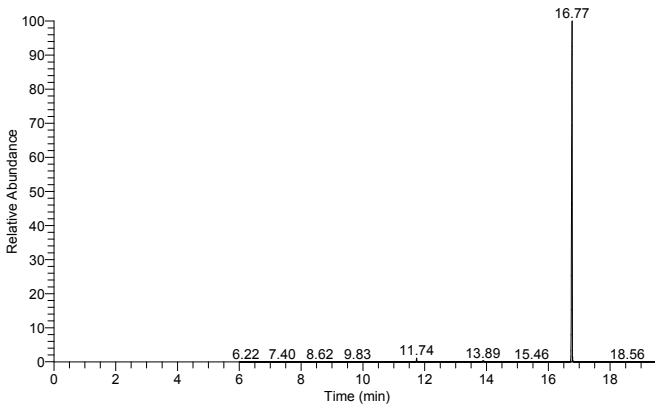


2e) MS data of the above Figure 2c.

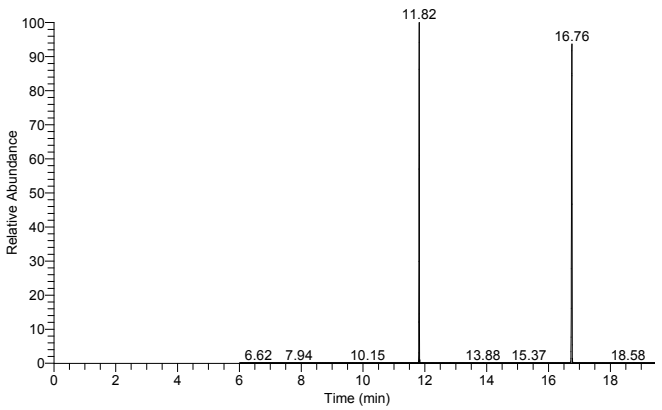
GC and GC-MS data for Entry 5 in Table 2.



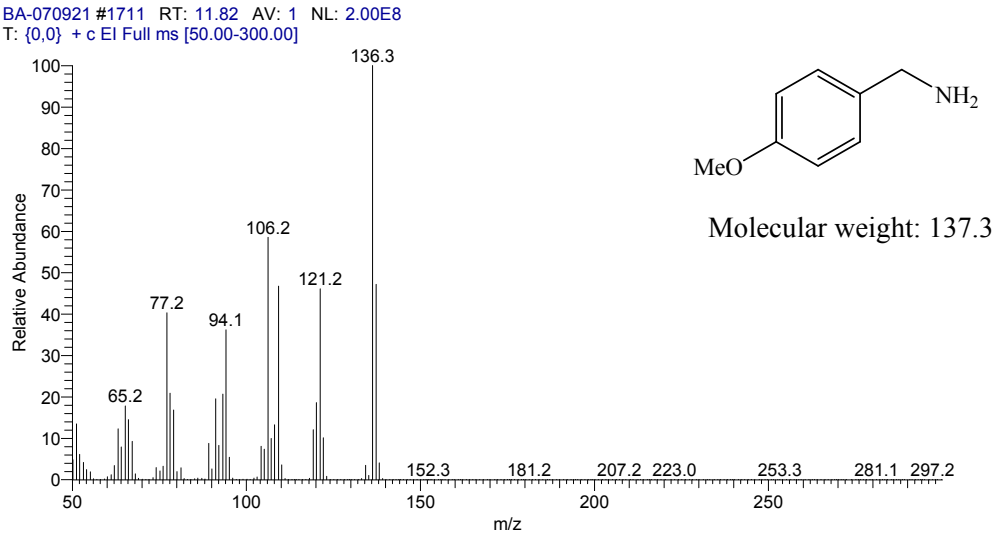
5a) GC spectrum of standard sample *p*-methoxyl-benzylamine.



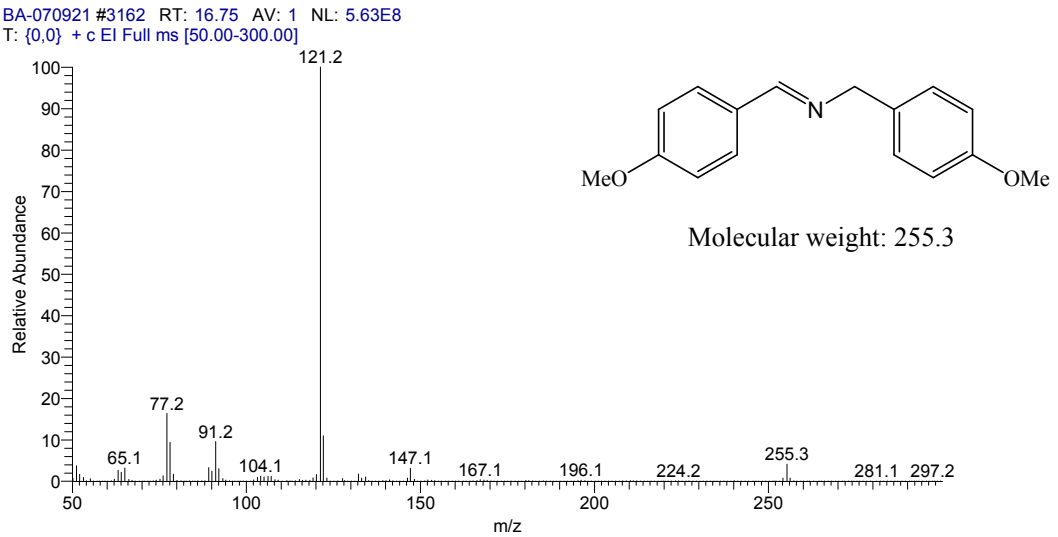
5b) GC spectrum of standard sample $CH_3OC_6H_4CH{=}NCH_2C_6H_4OCH_3$ (the product of *p*-methoxyl - benzylamine oxidation).



5c) GC spectrum of *p*-methoxyl-benzylamine oxidation (entry 5) after 3.5 h visible light irradiation.

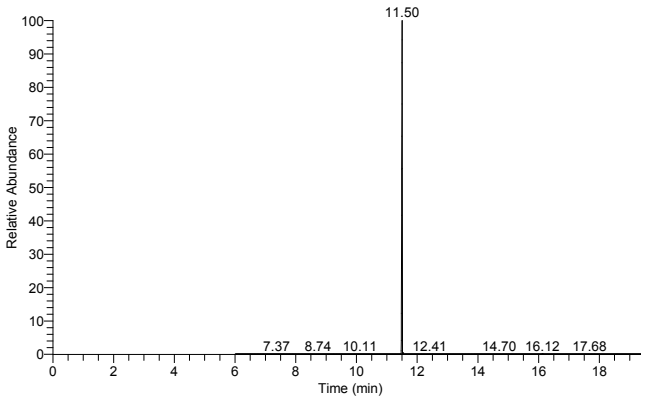


5d) MS data of the above Figure 5c.

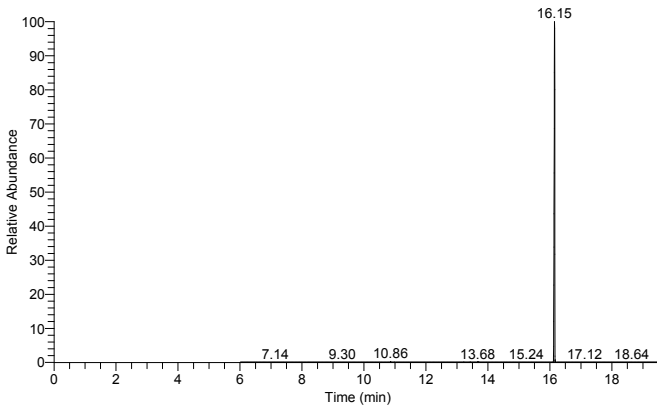


5e) MS data of the above Figure 5c.

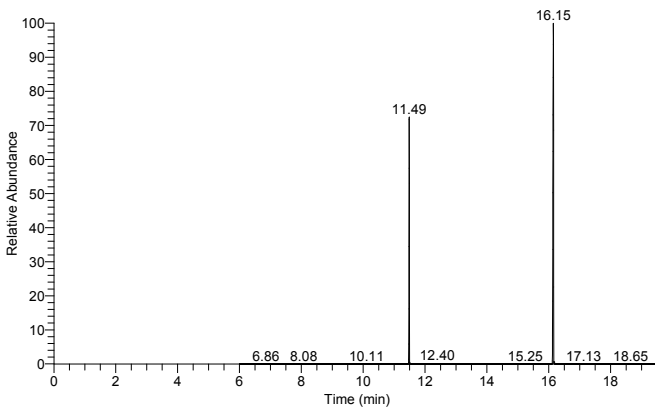
GC and GC-MS data for Entry 6 in Table 2.



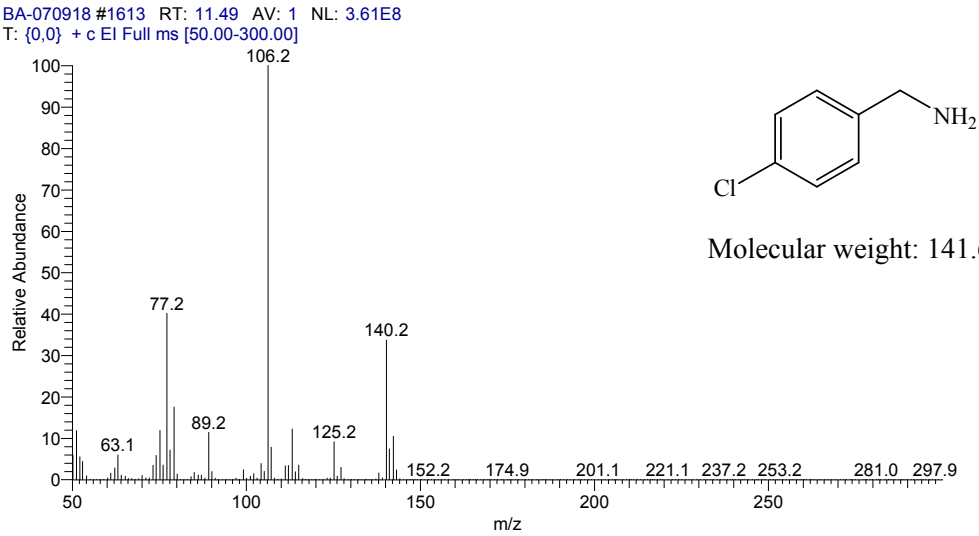
6a) GC spectrum of standard sample *p*-chlorobenzylamine.



6b) GC spectrum of standard sample $ClC_6H_4CH{=}NCH_2C_6H_4Cl$ (the product of *p*-chlorobenzylamine oxidation).

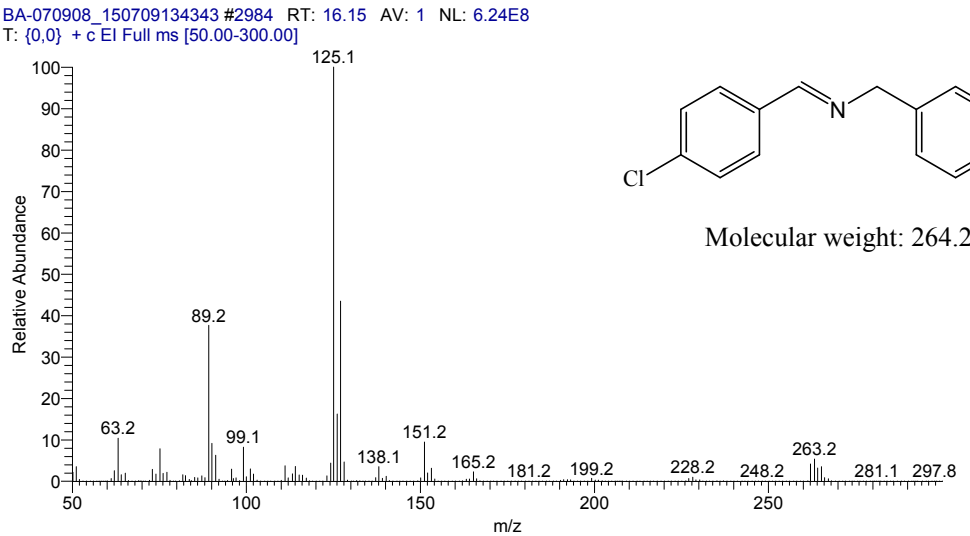


6c) GC spectrum of *p*-chlorobenzylamine oxidation (entry 6) after 7 h visible light irradiation.



Molecular weight: 141.6

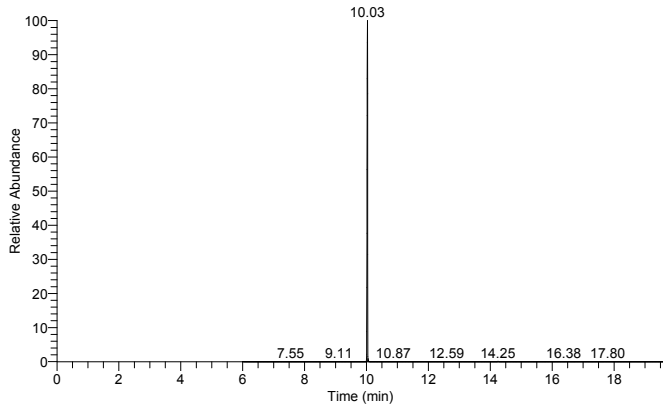
6d) MS data of the above Figure 6c.



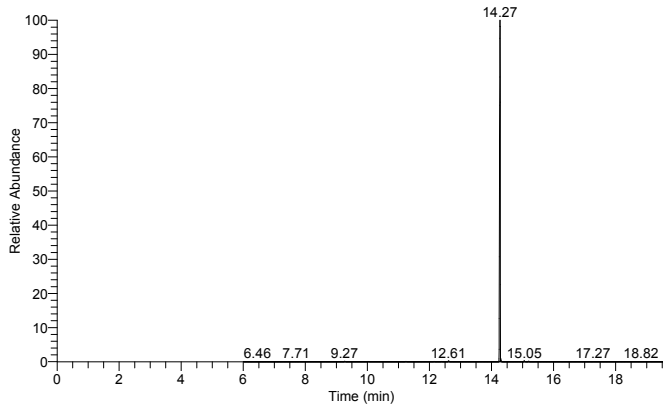
Molecular weight: 264.2

6e) MS data of the above Figure 6c.

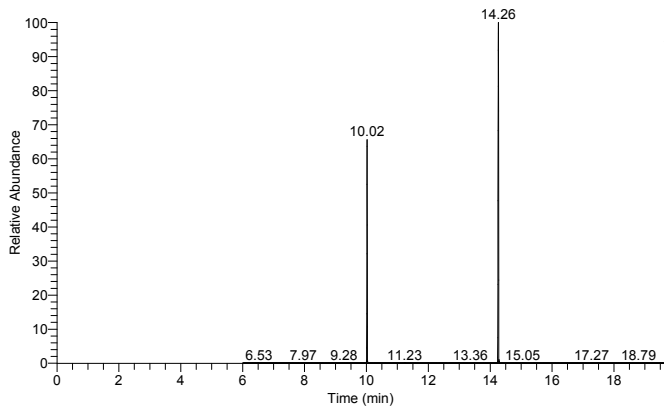
GC and GC-MS data for Entry 7 in Table 2.



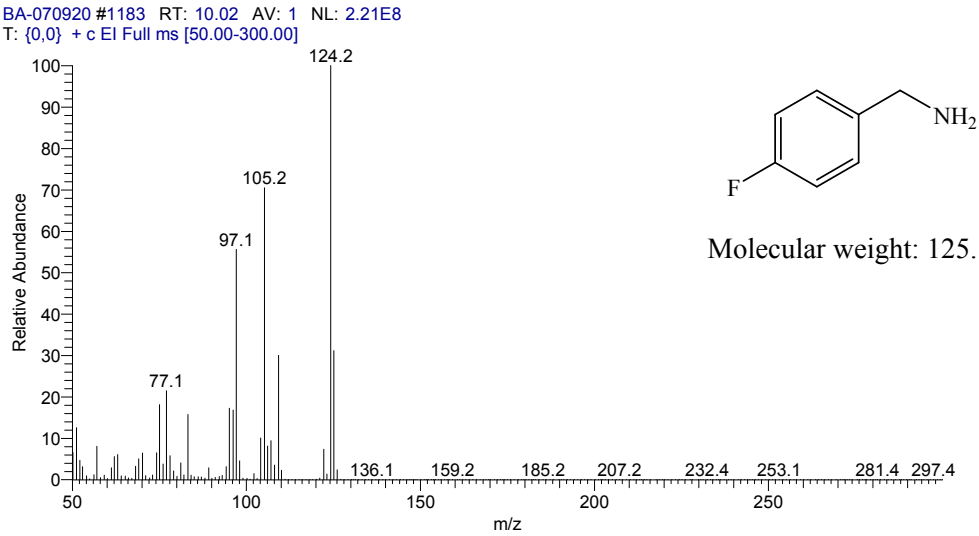
7a) GC spectrum of standard sample *p*-fluorobenzylamine.



7b) GC spectrum of standard sample $FC_6H_4CH{=}NCH_2C_6H_4F$ (the product of *p*-fluorobenzylamine oxidation).

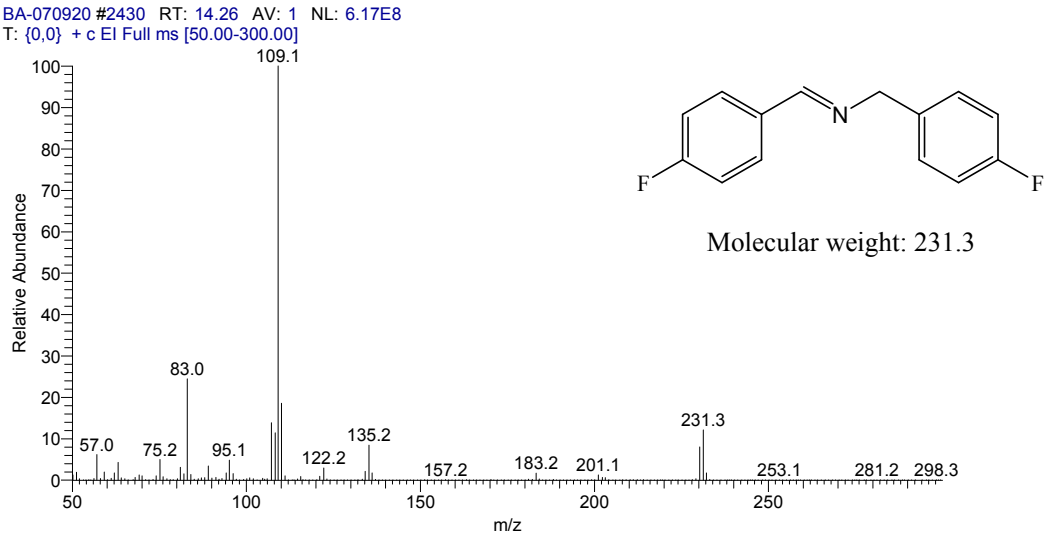


7c) GC spectrum of *p*-fluorobenzylamine oxidation (entry 7) after 7 h visible light irradiation.



Molecular weight: 125.1

7d) MS data of the above Figure 7c.



Molecular weight: 231.3

7e) MS data of the above Figure 7c.

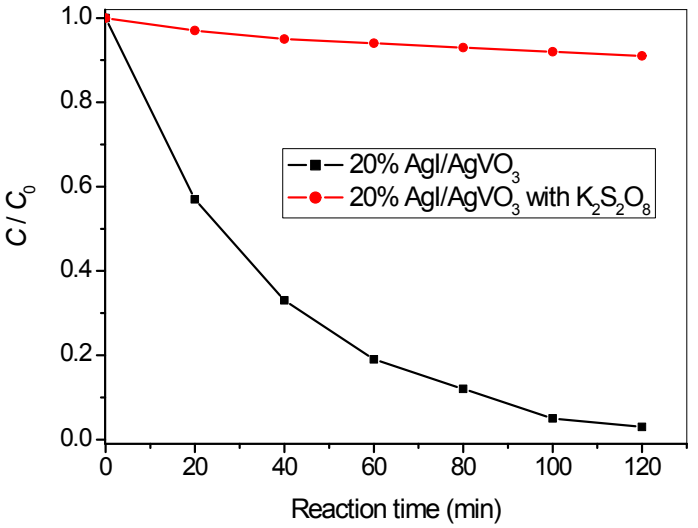


Fig. S4 Controlled experiment for photocatalytic reduction of Cr(VI) over 20% $AgI/AgVO_3$ nanocomposites under visible light irradiation with addition of $K_2S_2O_8$ (0.1 mmol) as a scavenger for photoinduced electrons.

Table S1 EDX results of 20% $AgI/AgVO_3$ sample after different reaction time.

Catalyst	Atomic content (at. %)				
	Ag ($Ag^+ + Ag^0$)	V	I	O	Ag^0
20% $AgI/AgVO_3$	15.74	14.42	1.29	68.55	– –
20% $AgI/AgVO_3$ after 1.5 h	17.07	13.96	1.22	67.75	1.89
20% $AgI/AgVO_3$ after 1 cycle	17.16	13.88	1.17	67.79	2.11
20% $AgI/AgVO_3$ after 4 cycles	17.35	14.01	1.15	67.49	2.19

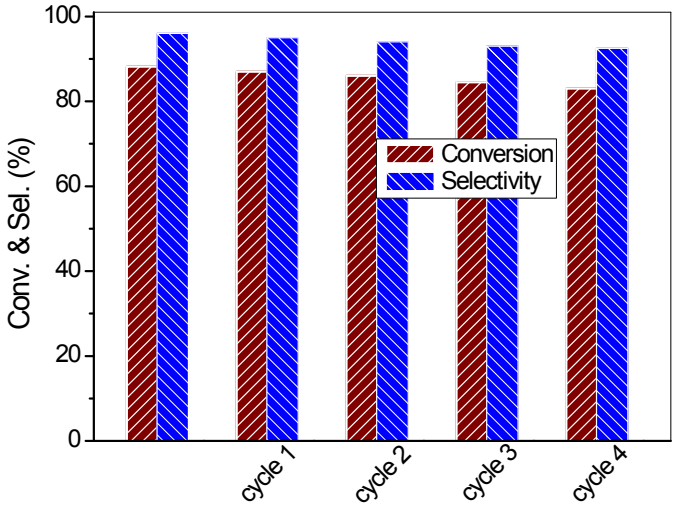


Fig. S5 Cycle runs of the optimum sample 20% AgI/$AgVO_3$ toward selective oxidation of benzylamine under visible light irradiation for 12 h.