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Photodegradation of Methylene Blue Using $Ce_xZr_yO_2$ Nanocomposites Prepared via Non-stoichiometry Method

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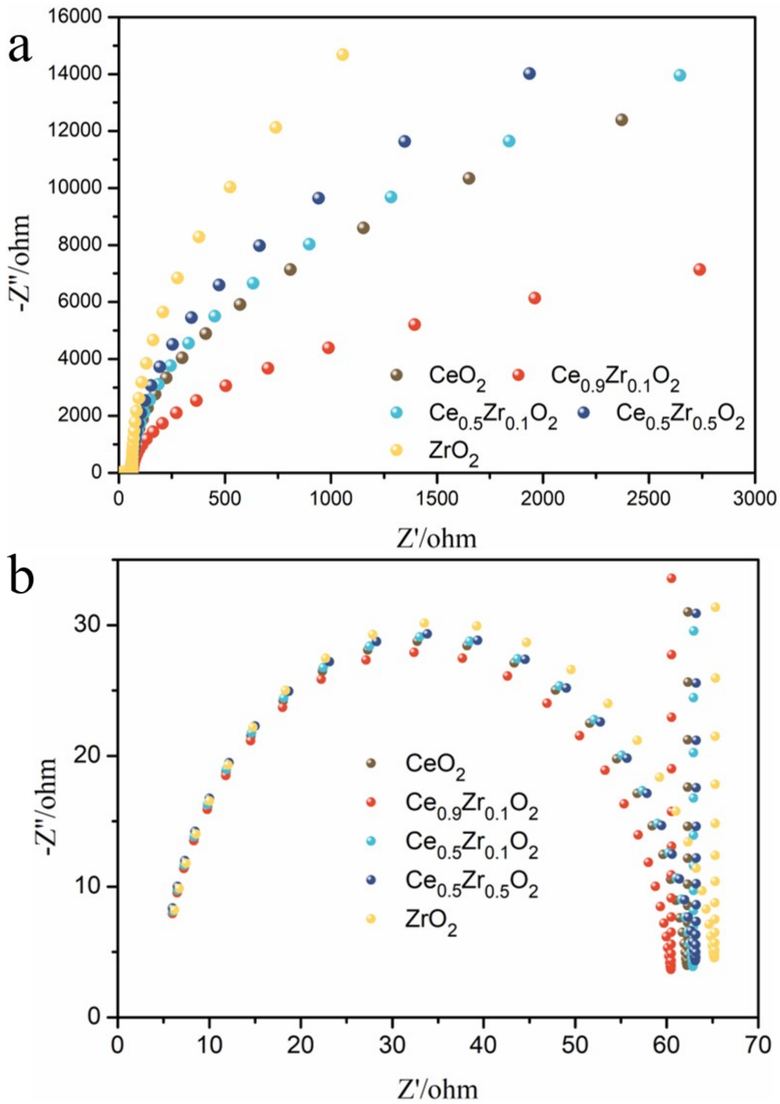

Fig. S1 (a) and (b) Nyquist plots of the various $Ce_xZr_yO_2$ nanocomposites, CeO_2 and ZrO_2.

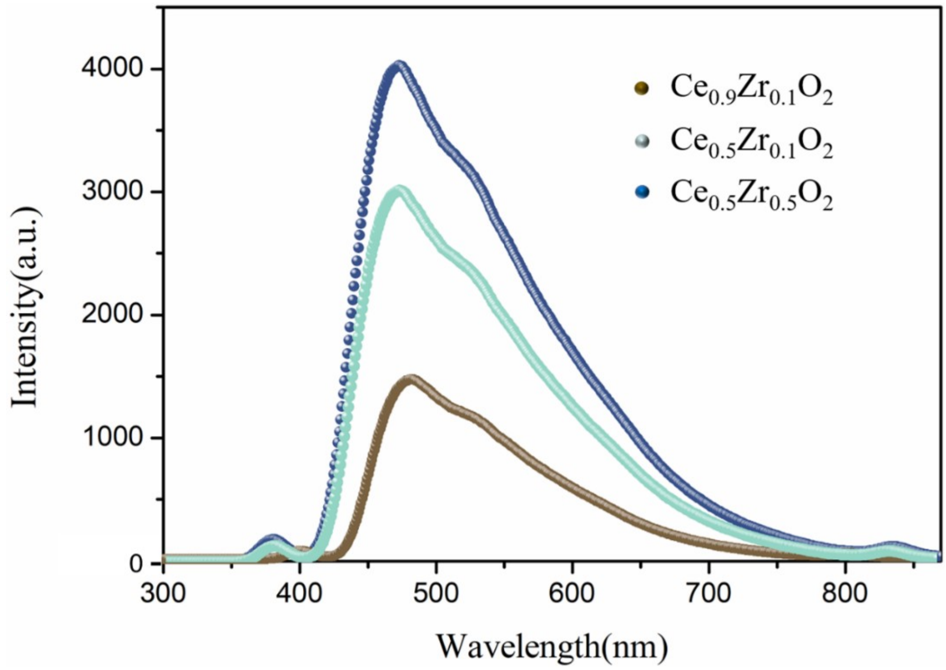

Fig. S2 The PL spectral data graph of $Ce_xZr_yO_2$.

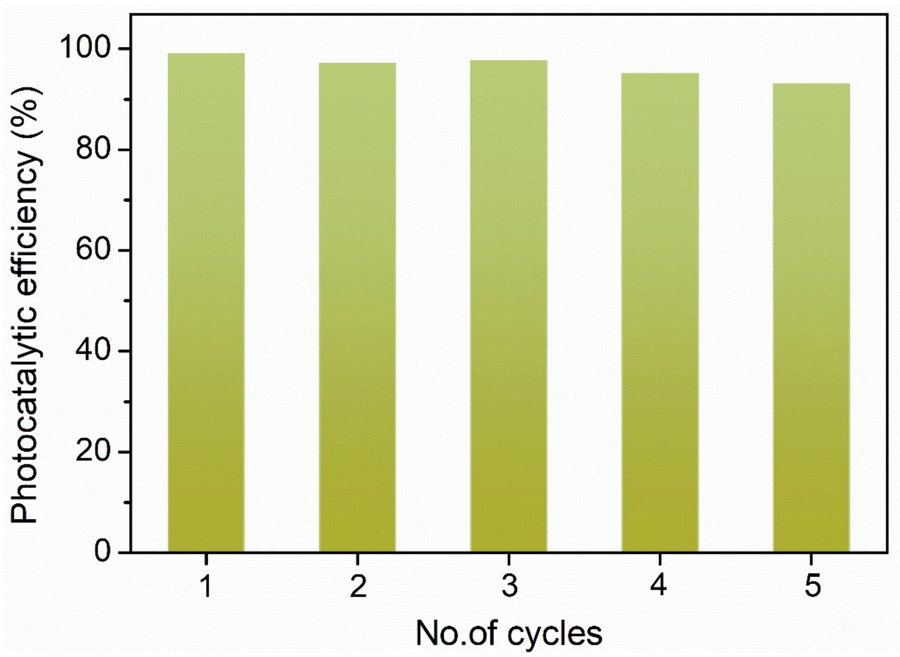

Fig. S3 Repeated photocatalytic tests of $Ce_{0.9}Zr_{0.1}O_2$.

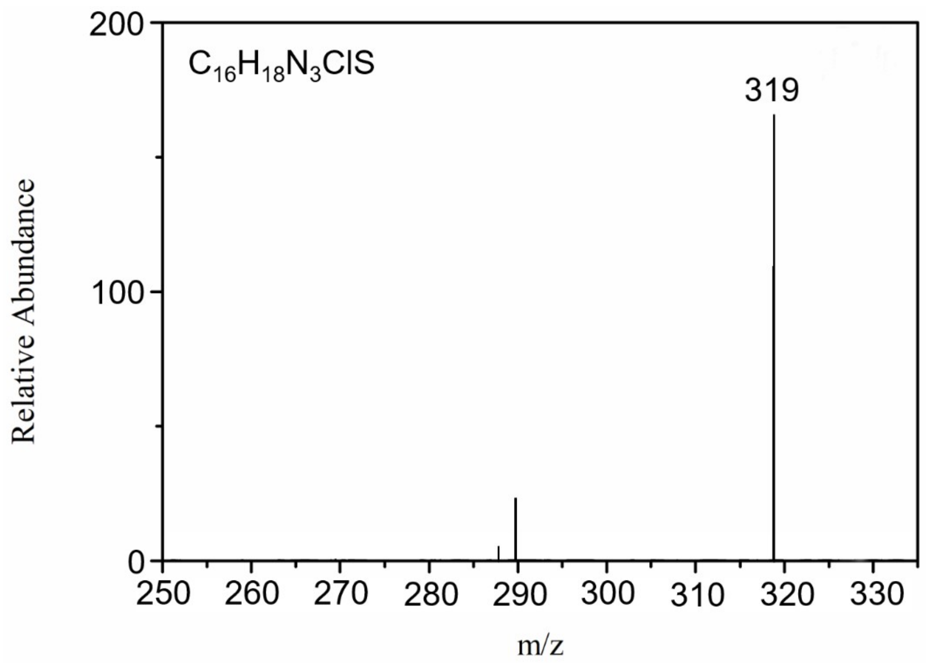

Fig. S4 Mass spectrum of MB during photocatalytic degradation reaction.

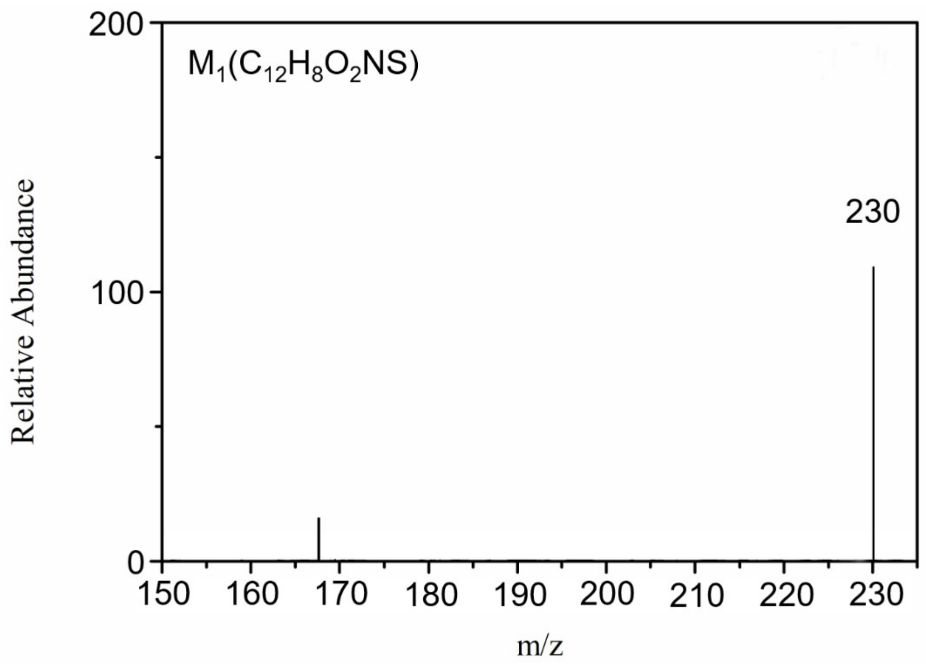

Fig. S5 Mass spectrum of reaction products M_1 during photocatalytic degradation of MB.

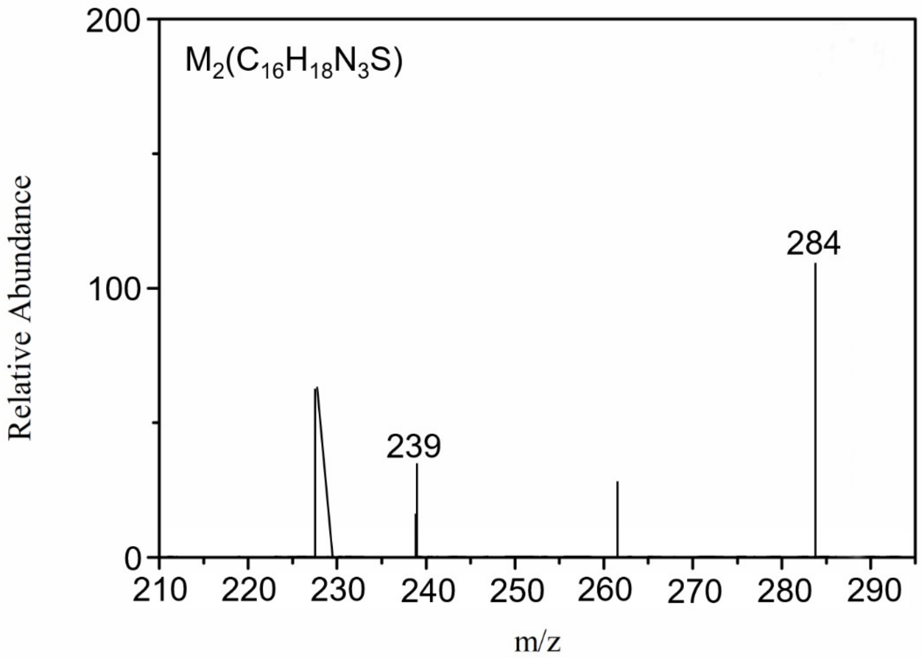

Fig. S6 Mass spectrum of reaction products M_2 during photocatalytic degradation of MB.

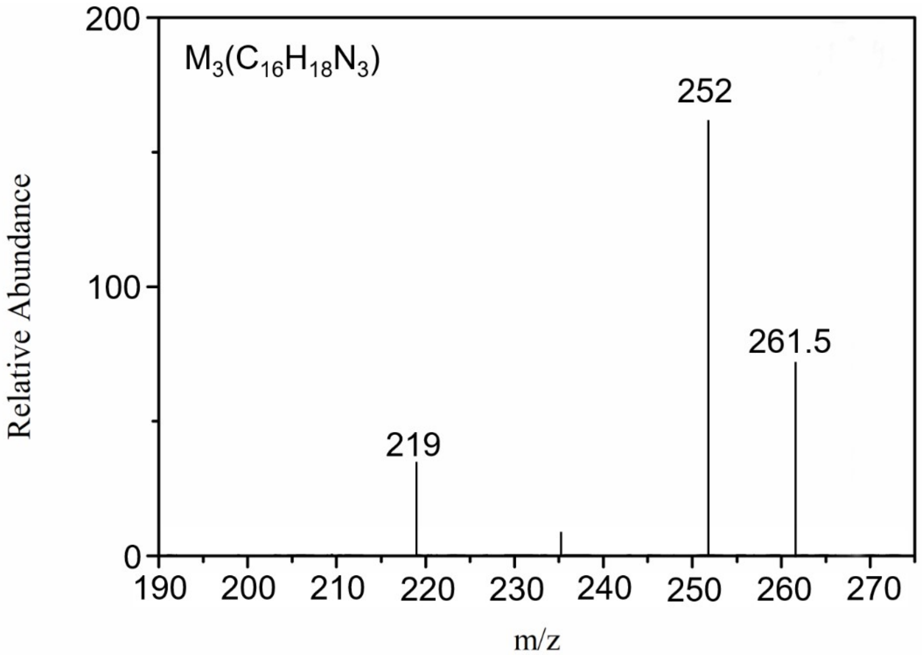

Fig. S7 Mass spectrum of reaction products M_3 during photocatalytic degradation of MB.

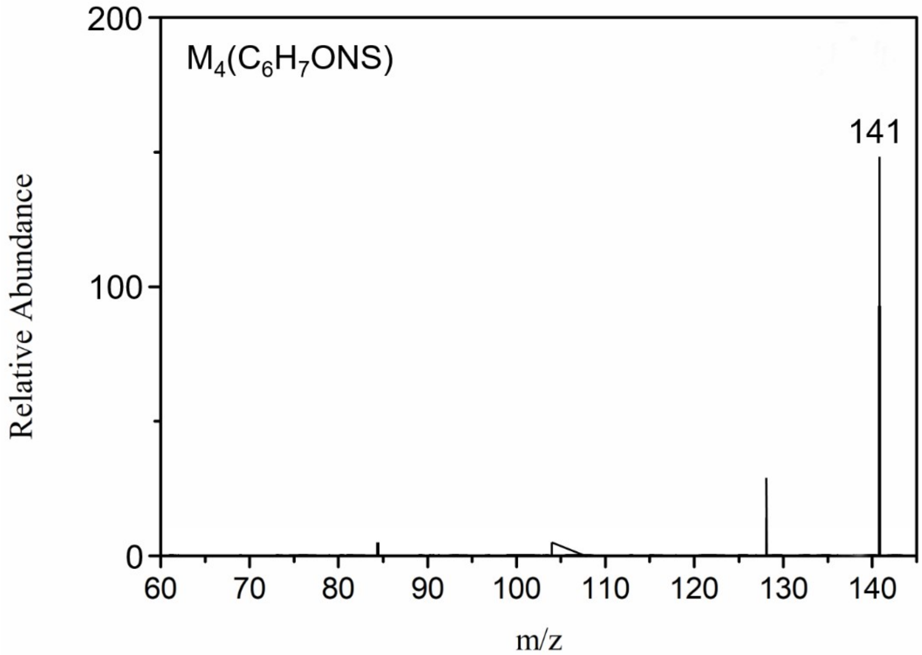

Fig. S8 Mass spectrum of reaction products M_4 during photocatalytic degradation of MB.

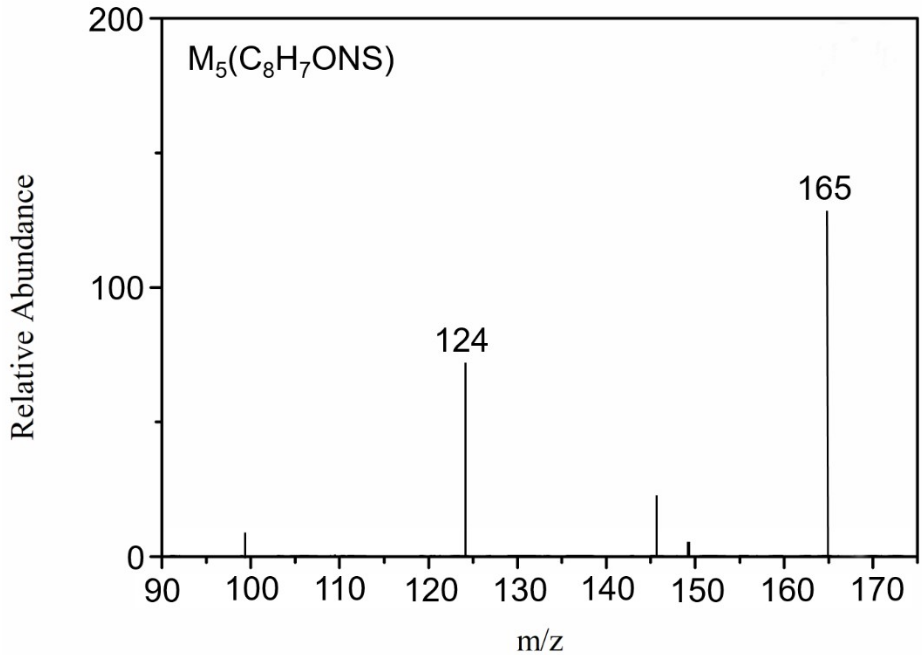

Fig. S9 Mass spectrum of reaction products M_5 during photocatalytic degradation of MB.

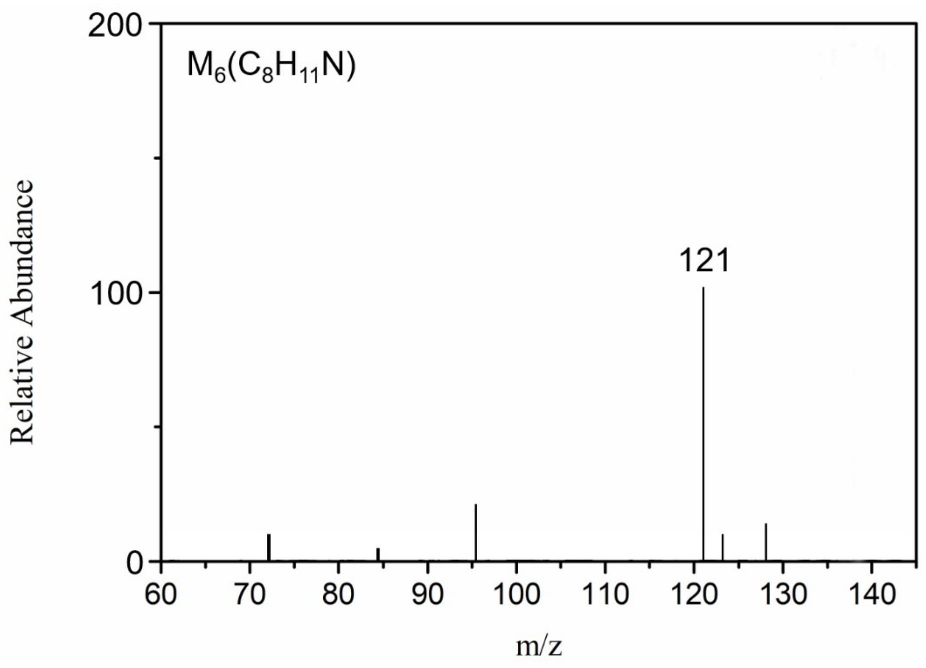

Fig. S10 Mass spectrum of reaction products M_6 during photocatalytic degradation of MB.

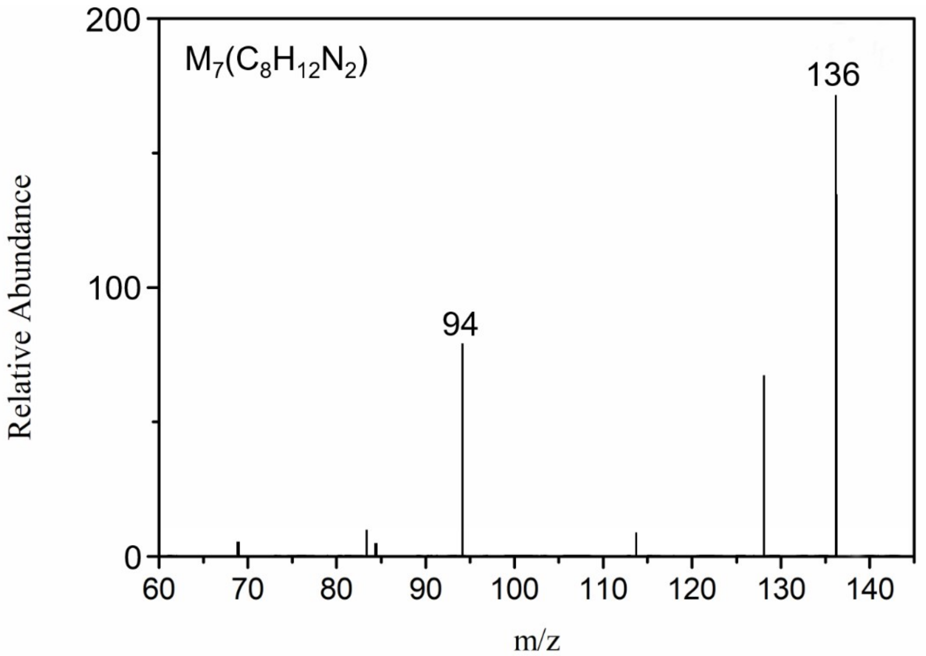

Fig. S11 Mass spectrum of reaction products M_7 during photocatalytic degradation of MB.

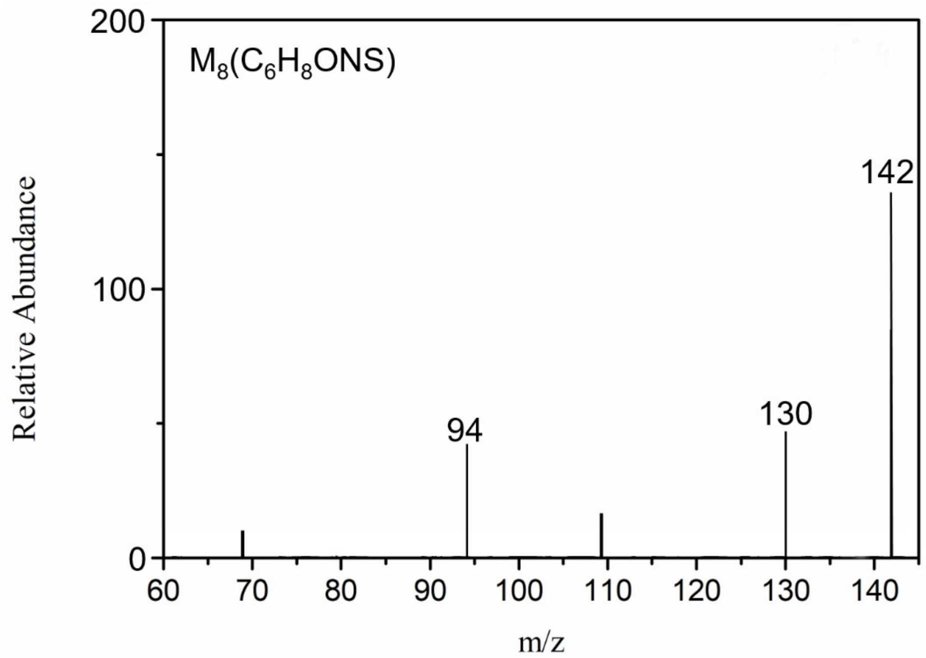

Fig. S12 Mass spectrum of reaction products M_8 during photocatalytic degradation of MB.

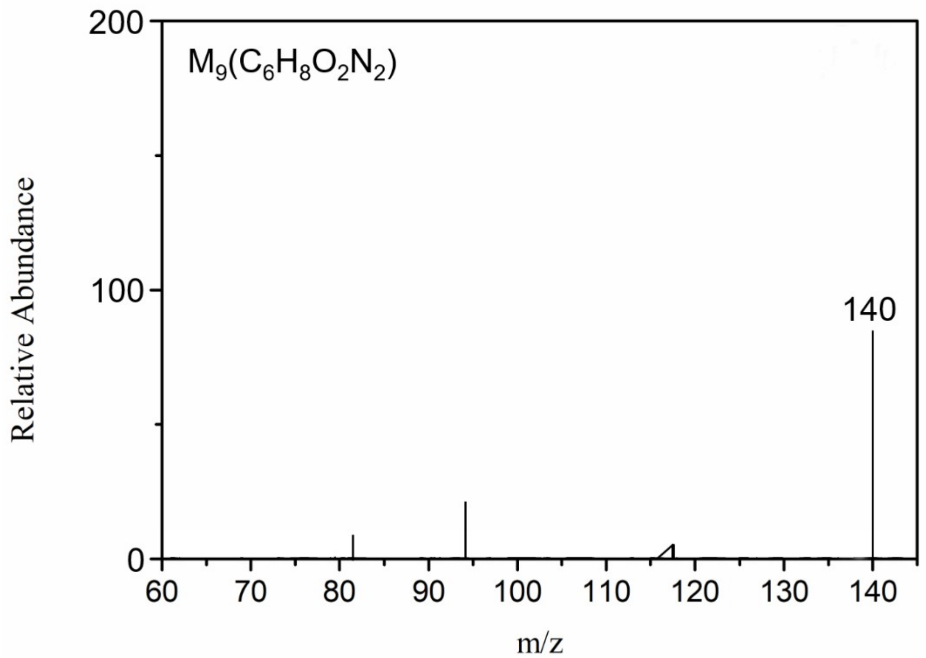

Fig. S13 Mass spectrum of reaction products M_9 during photocatalytic degradation of MB.

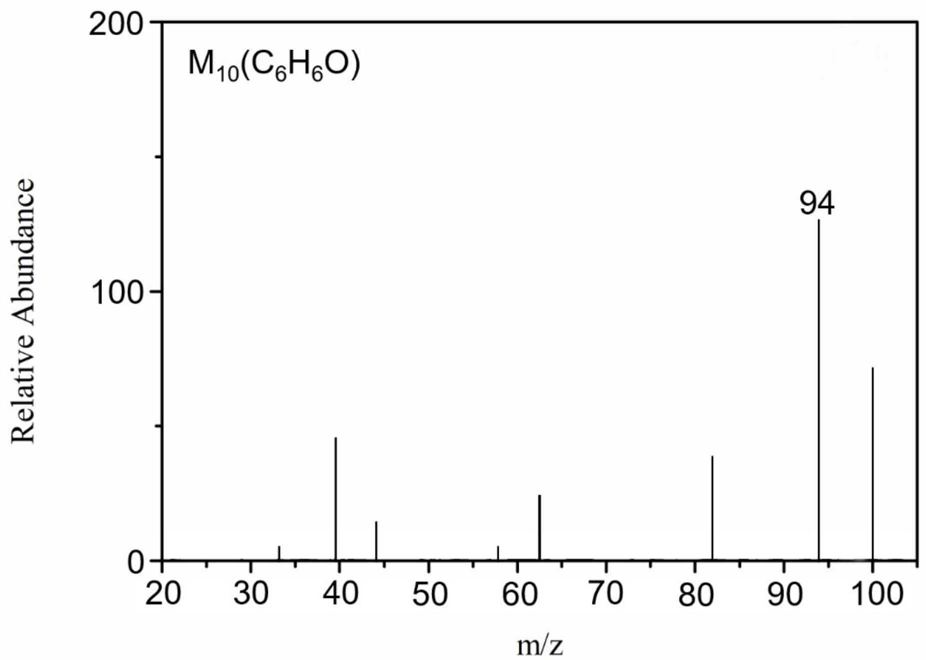

Fig. S14 Mass spectrum of reaction products M_{10} during photocatalytic degradation of MB.

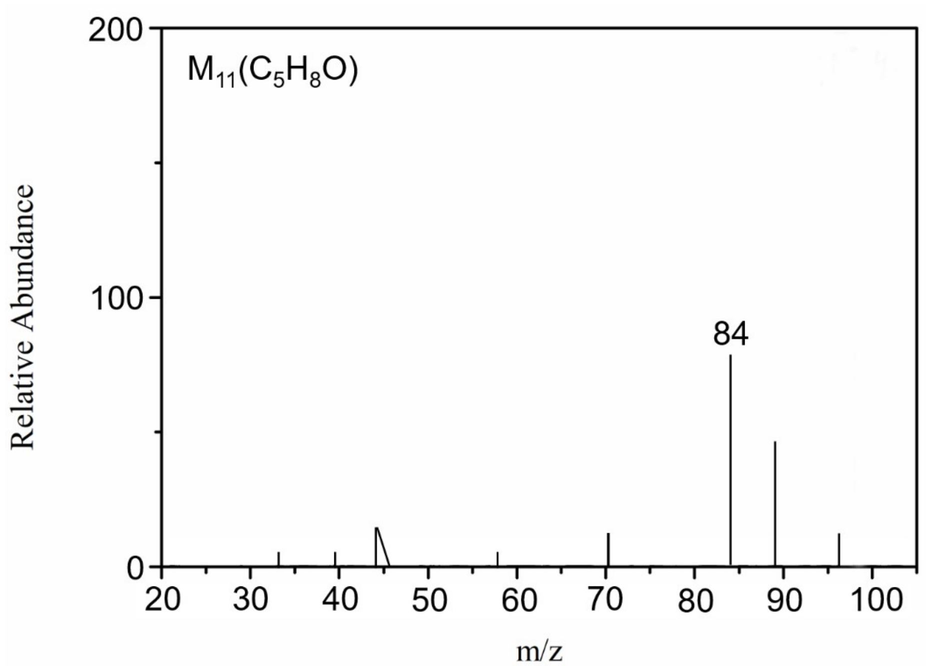

Fig. S15 Mass spectrum of reaction products M_{11} during photocatalytic degradation of MB.

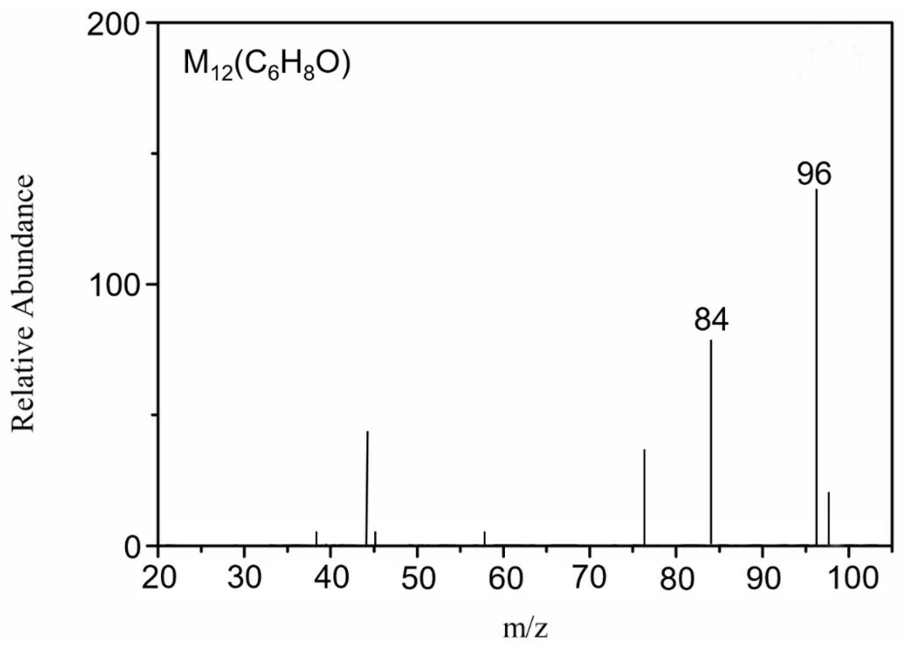

Fig. S16 Mass spectrum of reaction products M_{12} during photocatalytic degradation of MB.

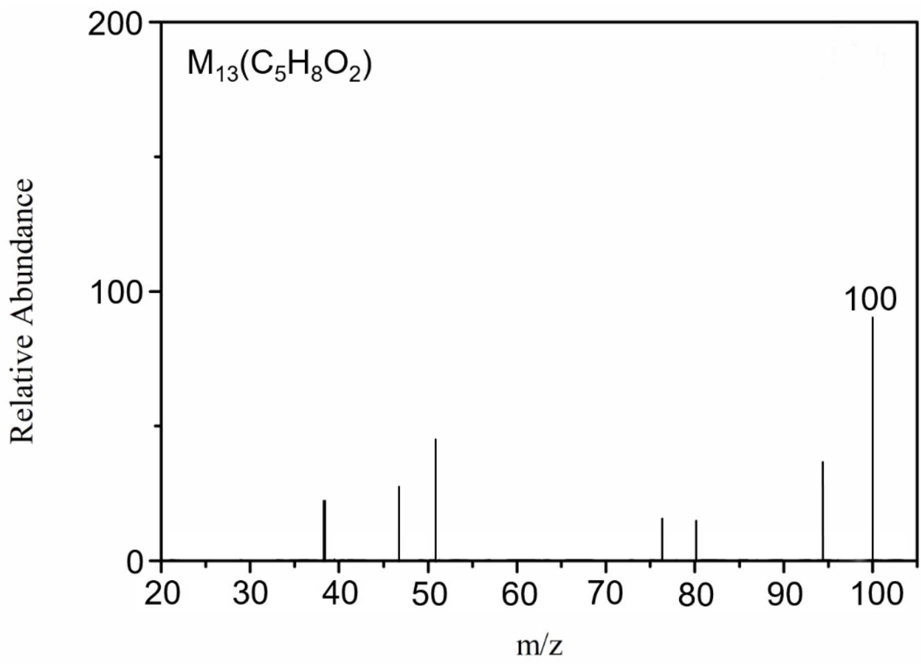

Fig. S17 Mass spectrum of reaction products M_{13} during photocatalytic degradation of MB.

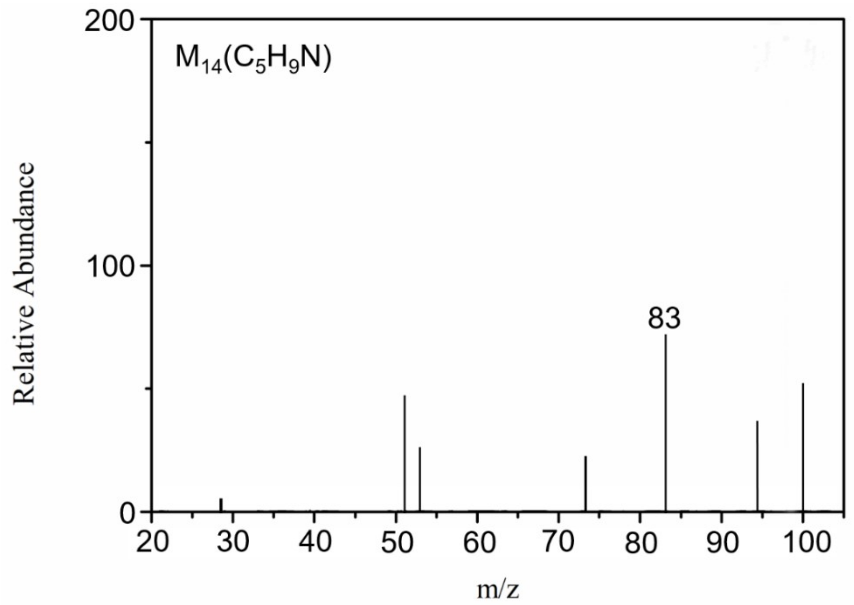

Fig. S18 Mass spectrum of reaction products M_{14} during photocatalytic degradation of MB.

Table S1. Photocatalytic degradation of methylene blue (MB) performance data comparison.

Materials	Response time	Degradation rate	Ref.
$Ce_{0.9}Zr_{0.1}O_2$	120 min	99.04%	This work
B-TiO_2/ MIL-100(Fe)	60 min	91.12%	1
ZnS/Cu-2%	360 min	56%	2
Cr/CeO_2	100 min	59%	3
Pd/TiO_2	120 min	96.90%	4
Ag/$CoFe_2O_4$	30 min	>95%	5
TM-2-d	720 min	96%	6
SiO_2 commercial ceramic supports	300 min	94%	7
0.1% Ag-ZnO	210 min	92.90%	8
$Bi_{0.9}Gd_{0.07}La_{0.03}FeO_3$	90 min	95%	9
3at% Tb-doped	150 min	98.20%	10

$BiVO_4$

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