Electronic Supplementary Material (ESI) for Green Chemistry.


# Supporting Information for

# Solvent-free tactics to realize substitution of $I^-$ for $IO_3^-$ in $BiOIO_3$ photocatalyst with opposite charge transferring path

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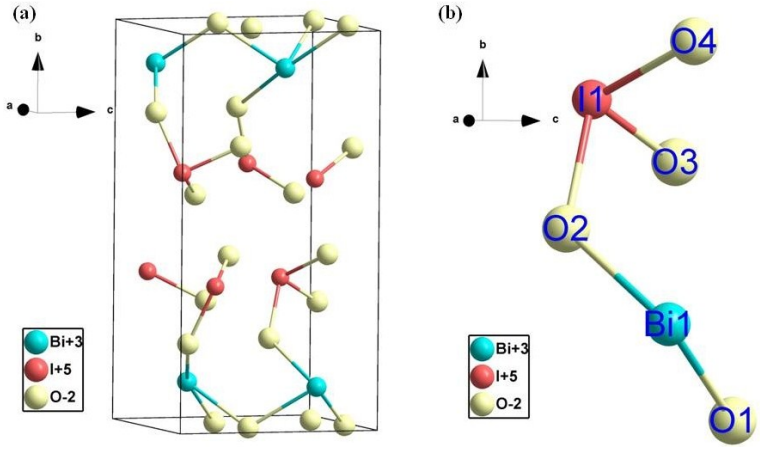


Fig. S1 The ball-and-stick models of $BiOIO_3$.

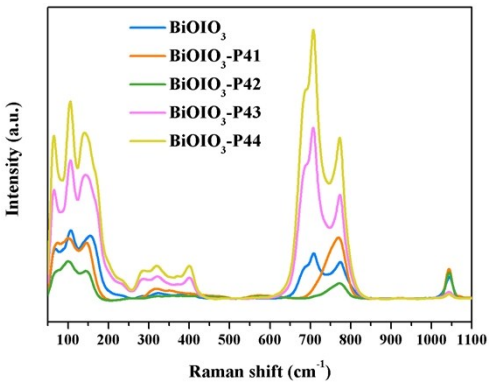


Fig. S2 The Raman of $BiOIO_3$ and $BiOIO_3$-P41~P44.

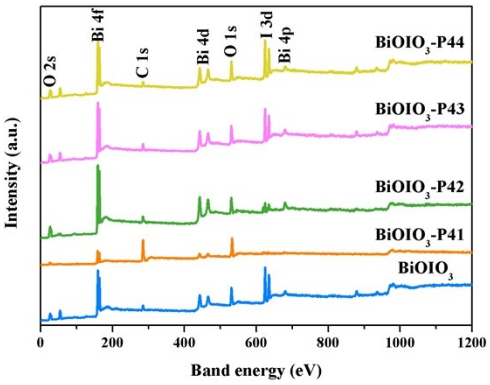


Fig. S3 The XPS survey scan of $BiOIO_3$ and $BiOIO_3$-P41~P44.

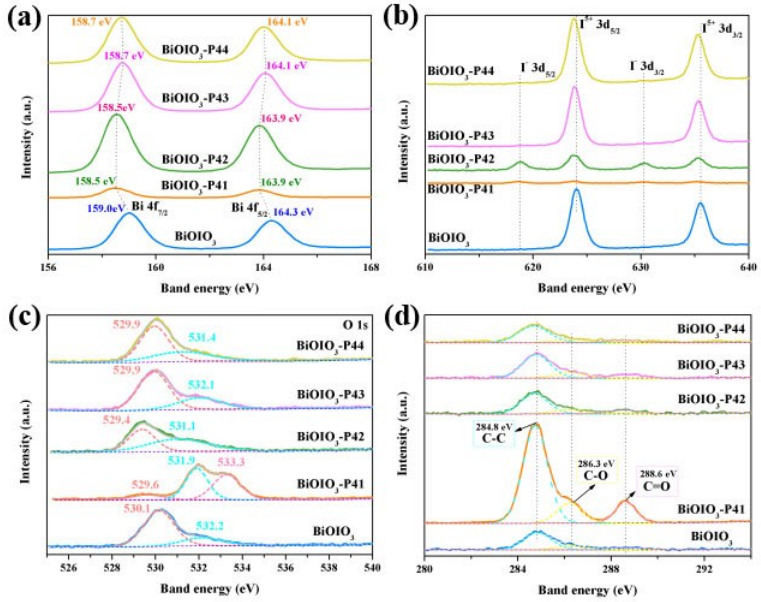


Fig. S4 The XPS spectra of $BiOIO_3$ and $BiOIO_3$-P41~P44: (a) Bi 4f, (b) I 3d, (c) O 1s and (d) C 1s.

Tab. S1 The area ratio of $O_{lat}/O_{C-O}$ for $BiOIO_3$ and $BiOIO_3$-P42~P44, respectively.

| Sample | $BiOIO_3$ | $BiOIO_3$-P42 | $BiOIO_3$-P43 | $BiOIO_3$-P44 |
|---|---|---|---|---|
| $O_{lat}/O_{C-O}$ | 1.24 | 3.31 | 2.33 | 1.79 |

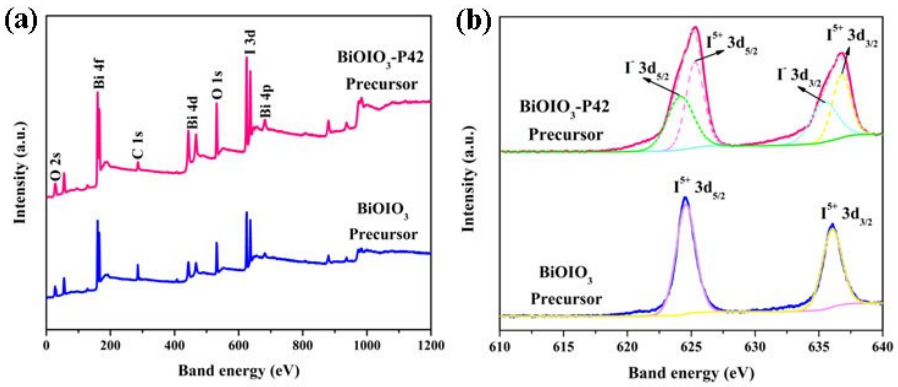


Fig. S5 The XPS of the precursor of $BiOIO_3$ and $BiOIO_3$-P42: (a) survey scan, (b) I 3d.

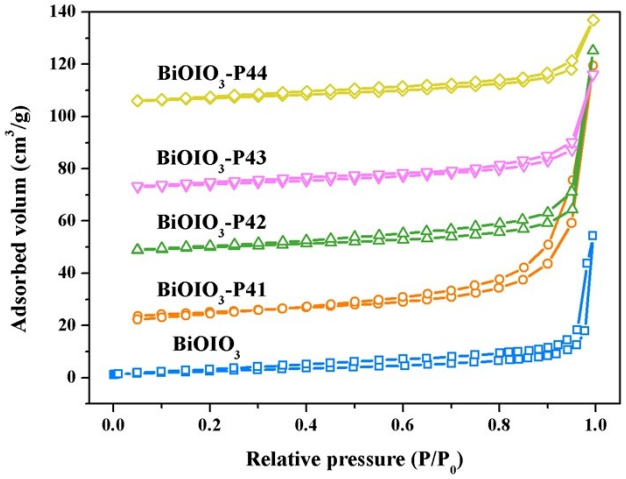


Fig. S6 The $N_2$ adsorption and desorption isotherm of $BiOIO_3$ and $BiOIO_3$-P41~P44.

Tab. S2 The BET specific surface area of $BiOIO_3$ and $BiOIO_3$-P41~P44.

| Sample | $BiOIO_3$ | $BiOIO_3$-P41 | $BiOIO_3$-P42 | $BiOIO_3$-P43 | $BiOIO_3$-P44 |
|---|---|---|---|---|---|
| Specific surface area ($m^2/g$) | 8.93 | 19.58 | 13.81 | 13.29 | 12.84 |

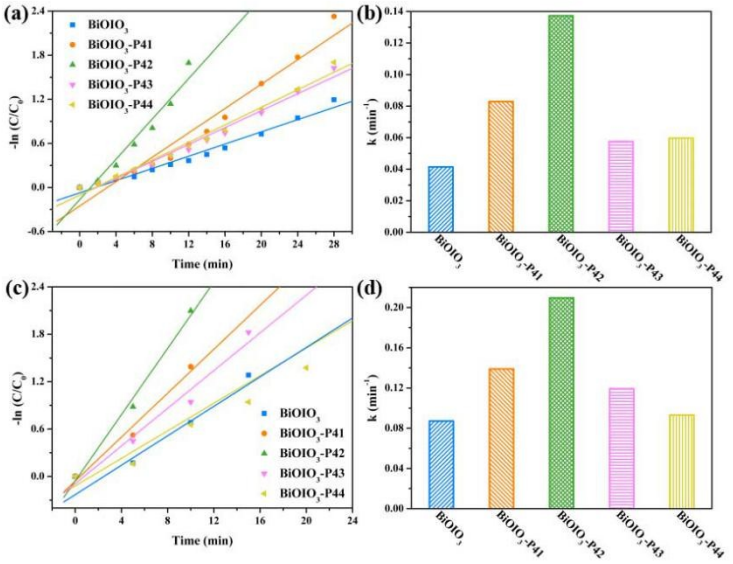


Fig. S7 The pseudo first-order kinetics fitting plots and of apparent first-order rate constants MO (a, b) and BPA (c, d) for various photocatalysts.

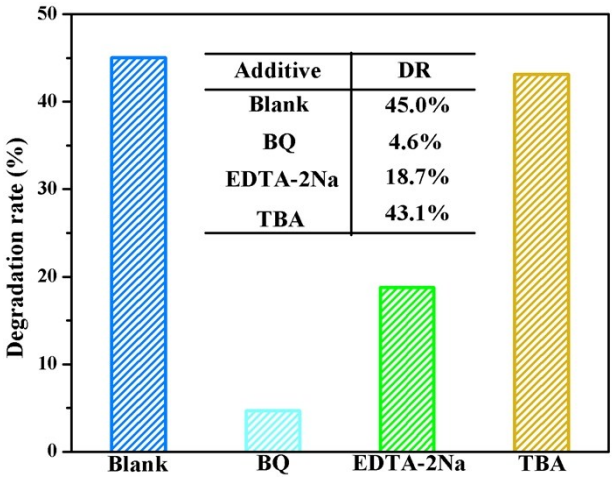


Fig. S8 The photogenerated charges trapping experiment on the photocatalytic degradation of MO over $BiOIO_3$ under UV light.

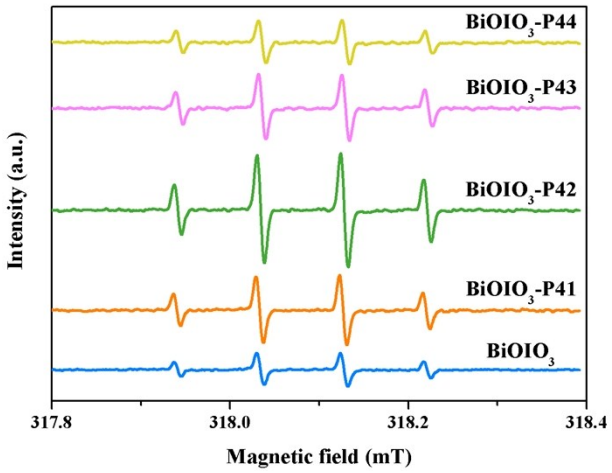


Fig. S9 DMPO spin-trapping ESR spectra in aqueous dispersion for DMPO-·OH of $BiOIO_3$ and $BiOIO_3$-P41~P44.

Fig. S10 The macroscopic reaction state images for the precursor of $BiOIO_3$-P42.