

## Supplementary Information

### Exploration of bismuth-based materials for photocatalytic decomposition of N<sub>2</sub>O

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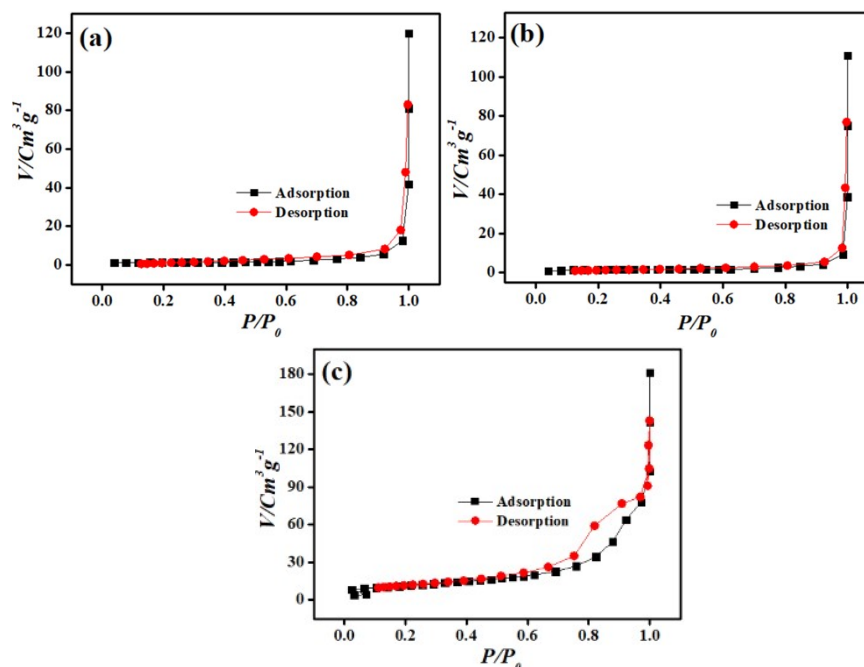
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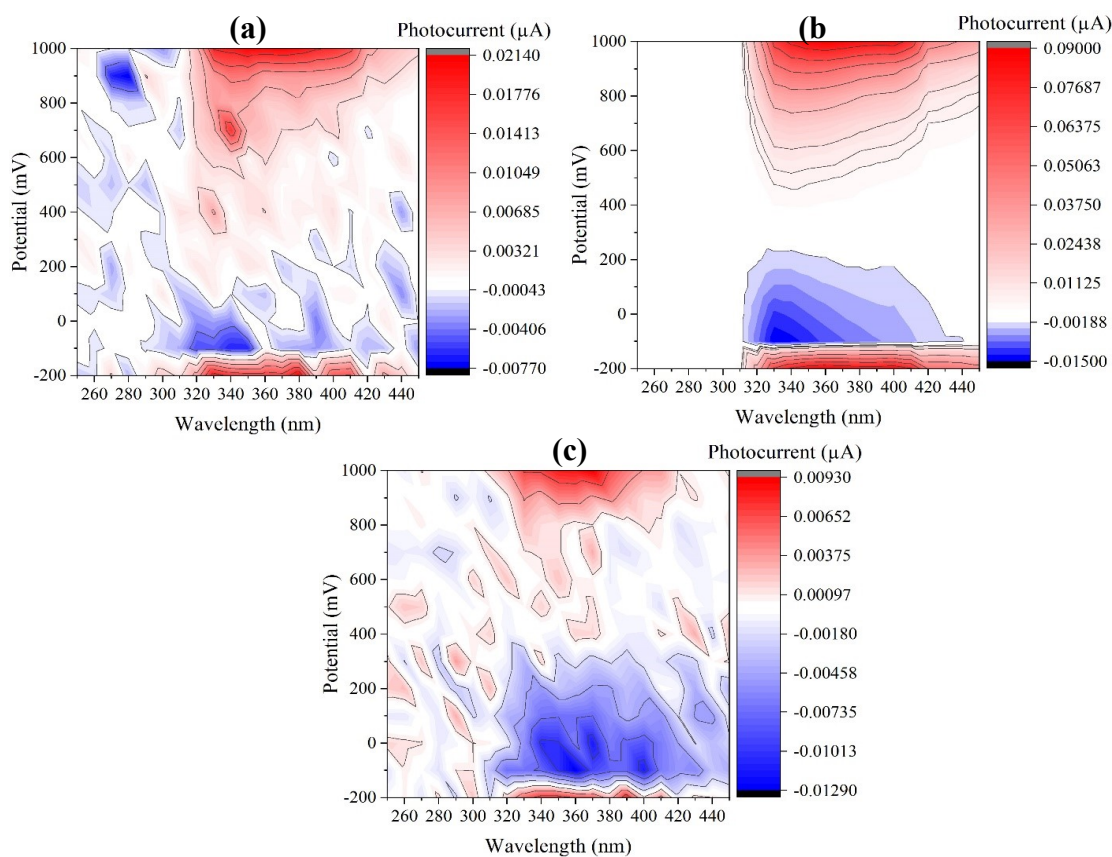
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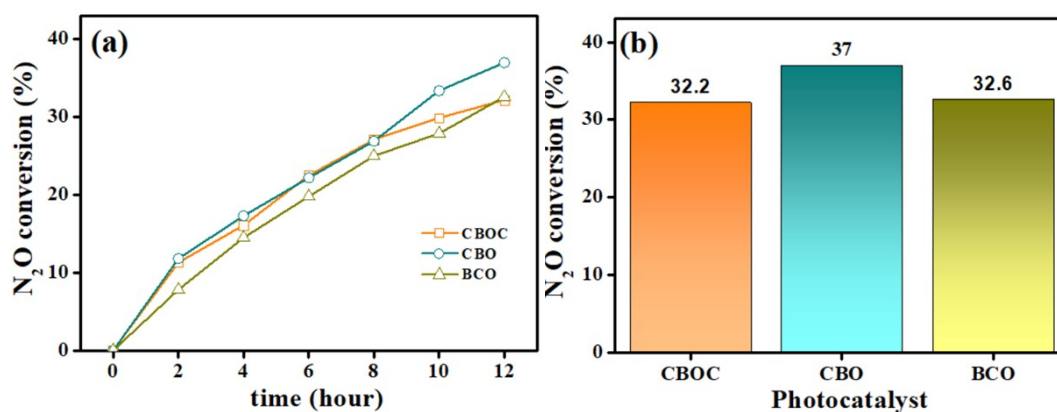


**Fig. S1** N<sub>2</sub> adsorption-desorption BET surface area isotherms of (a) CBOC, (b) CBO, and (c) BCO.

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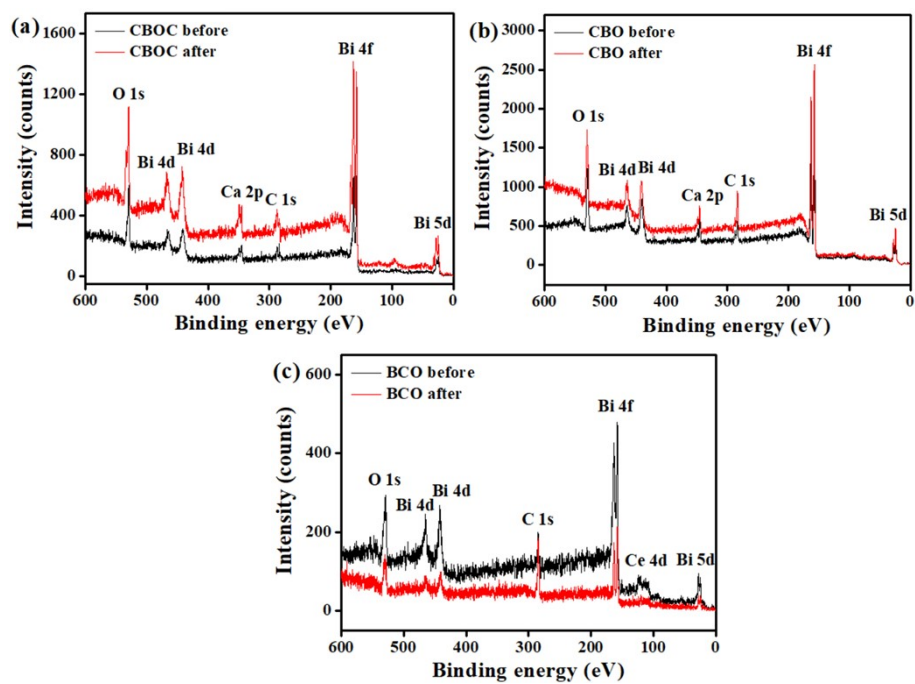


**Fig. S2** Photocurrent generation as a function of potential and wavelength for (a) CBOC, (b) CBO, and (c) BCO.

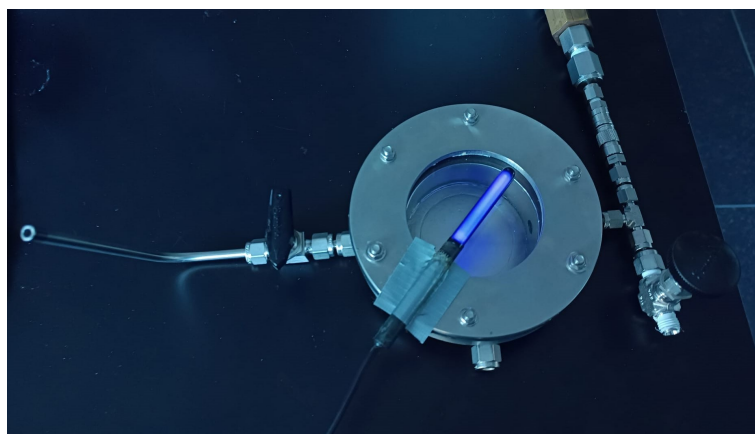


**Fig. S3** (a) Time dependence on the  $\text{N}_2\text{O}$  conversion during the photocatalytic decomposition of  $\text{N}_2\text{O}$  over synthesized CBOC, BCO, and CBO under UV-C irradiation (254 nm). (b) Maximum values of  $\text{N}_2\text{O}$  conversion using CBOC, CBO and BCO after 12 h of UV-C irradiation ( $\lambda_{\text{max}} = 254$ ).

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**Fig. S4** XPS wide spectra of CBOC, CBO and BCO before and after  $N_2O$  decomposition.



**Fig. S5** The batch photoreactor used for photocatalytic  $N_2O$  decomposition with a 365 nm pen-ray lamp.