

Supplementary Information

The Roles of Density-tunable Surface Oxygen Vacancy over Bouquet-like Bi₂O₃ in Enhancing Photocatalytic Activity

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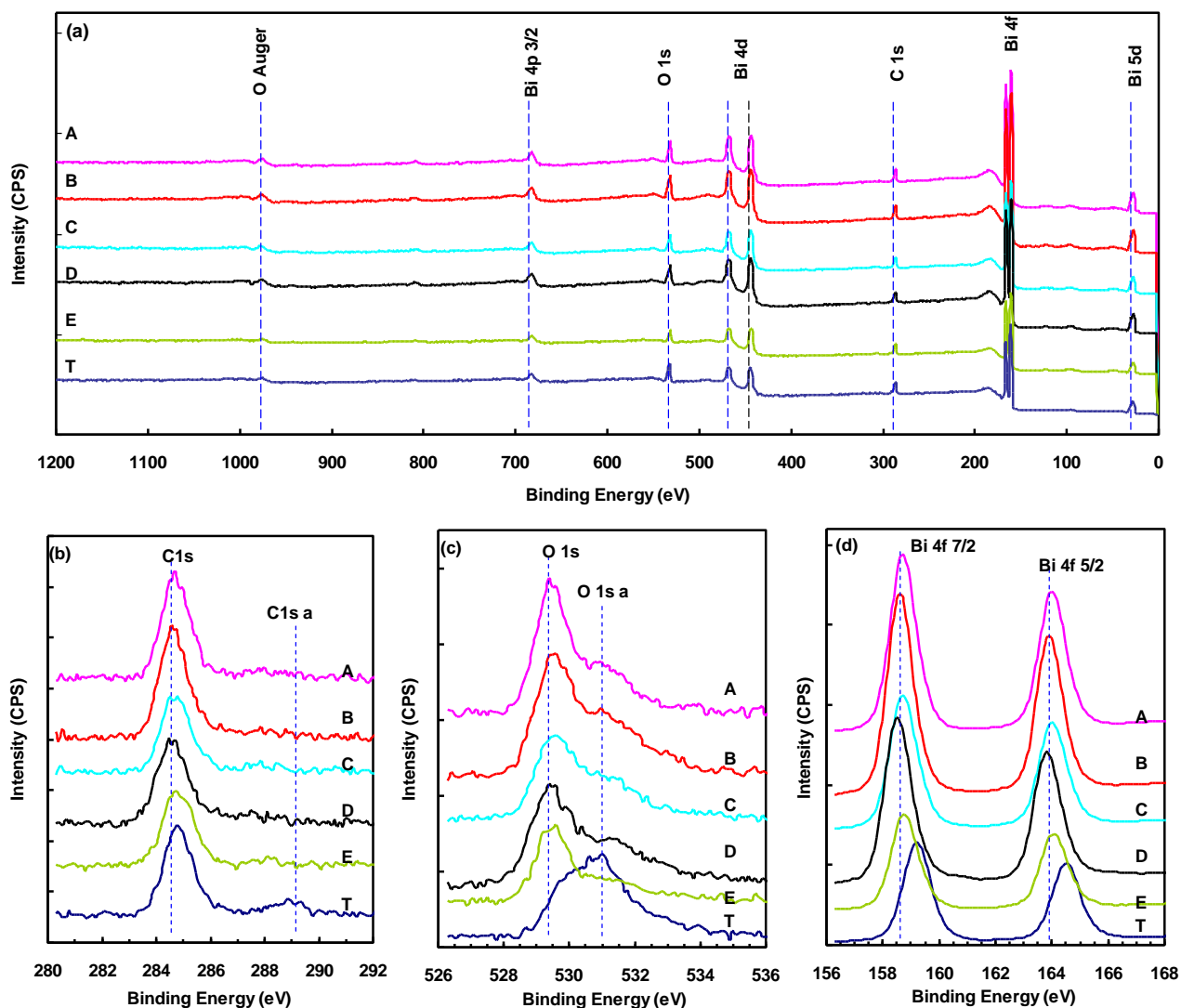


Figure S1. XPS spectra of rod- (Sample T) and bouquet-like Bi_2O_3 (Sample A, B, C, D, and E): (a) survey scans, (b) C 1s narrow scans, (c) O 1s narrow scans, and (d) Bi 4f narrow scans.

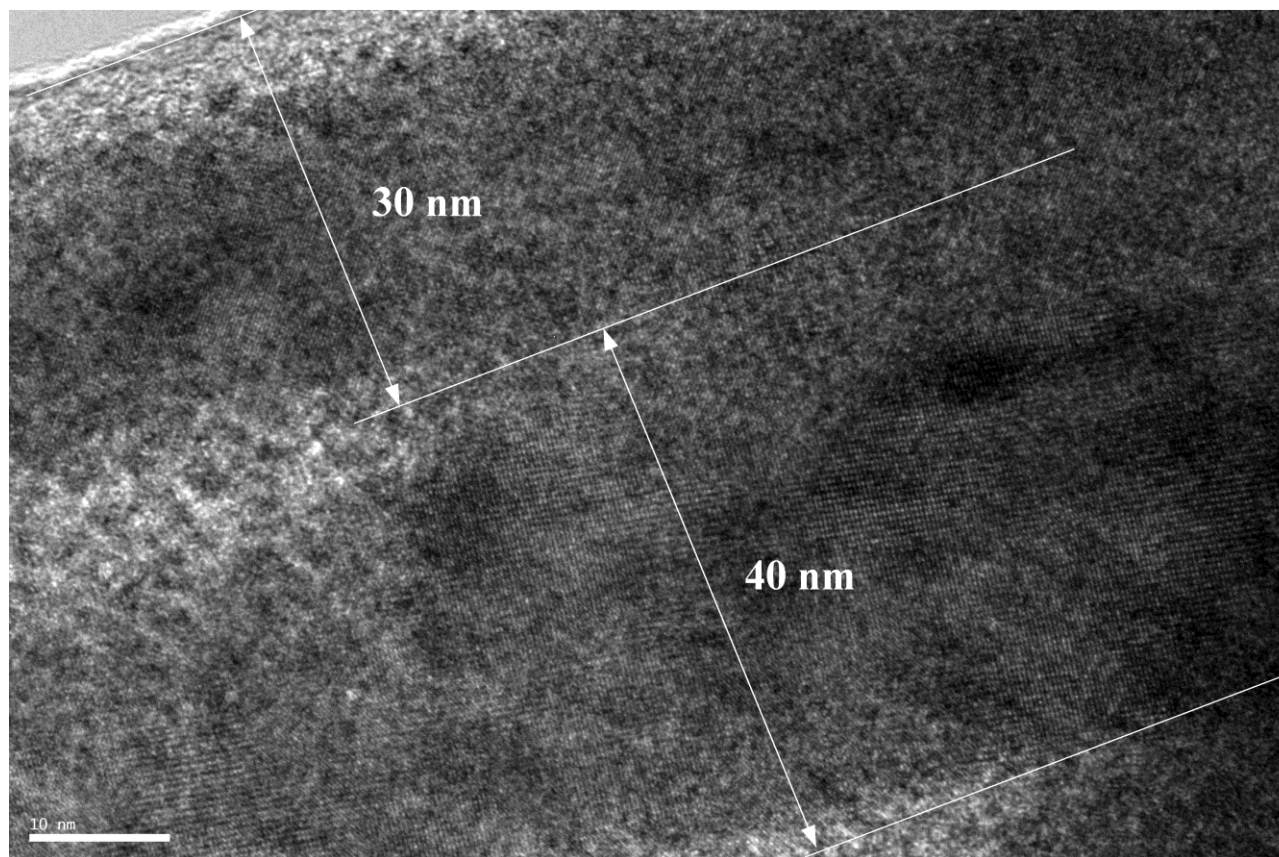


Figure S2. The enlarged TEM image of the tertiary structure size of bouquet- like Bi_2O_3 for illuminating the self-assembly formation process.

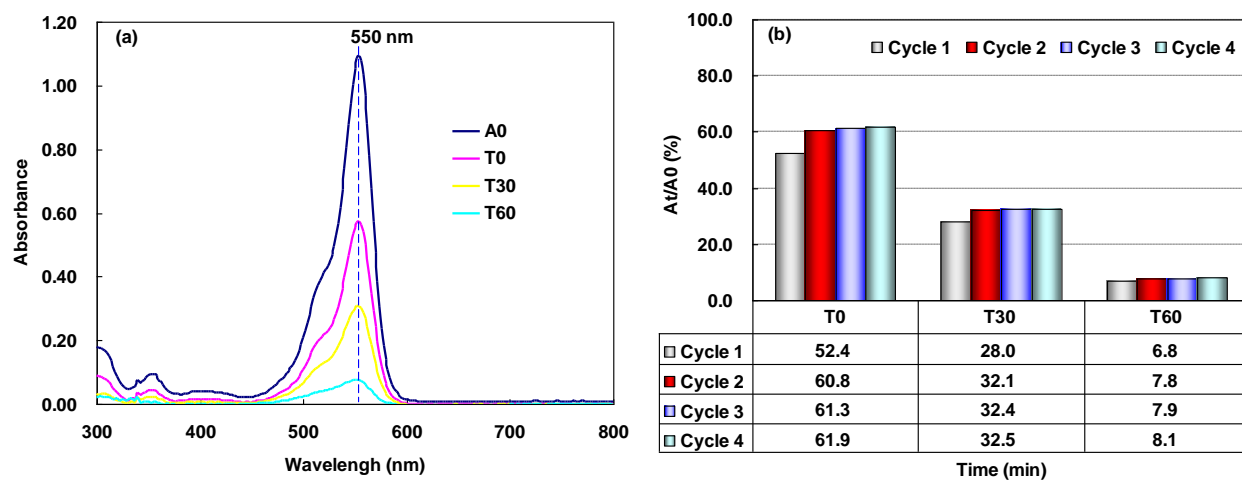


Figure S3. Photoactive stability of bouquet-like Bi_2O_3 (Sample C used as an example): (a) the absorbance scan, (b) the absorbance with varied time after 4-cycle reaction. (The photo-decolorization ratio $\eta=1-A_t/A_0$)

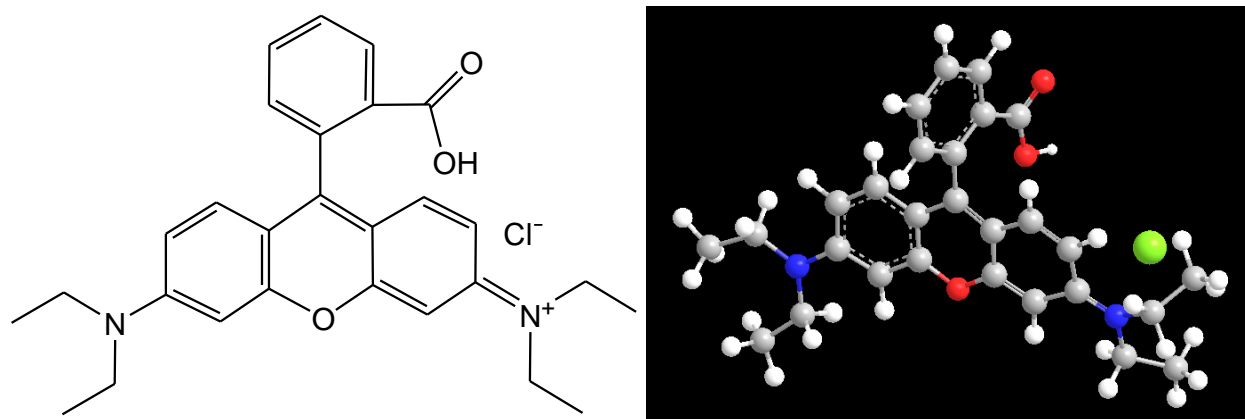


Figure S4. The schematic diagram of RhB constitutional formula.

Table S1. The estimated values of TOC analysis.

Samples	AU	TOC (mg·L ⁻¹)
Original solution of 10 ⁻⁵ mol·L ⁻¹ RhB	4568	78.40
A	1688	25.01
B	568.4	3.79
C	495.4	3.30
D	866.9	9.36
E	904.2	10.05
T	1774	26.27

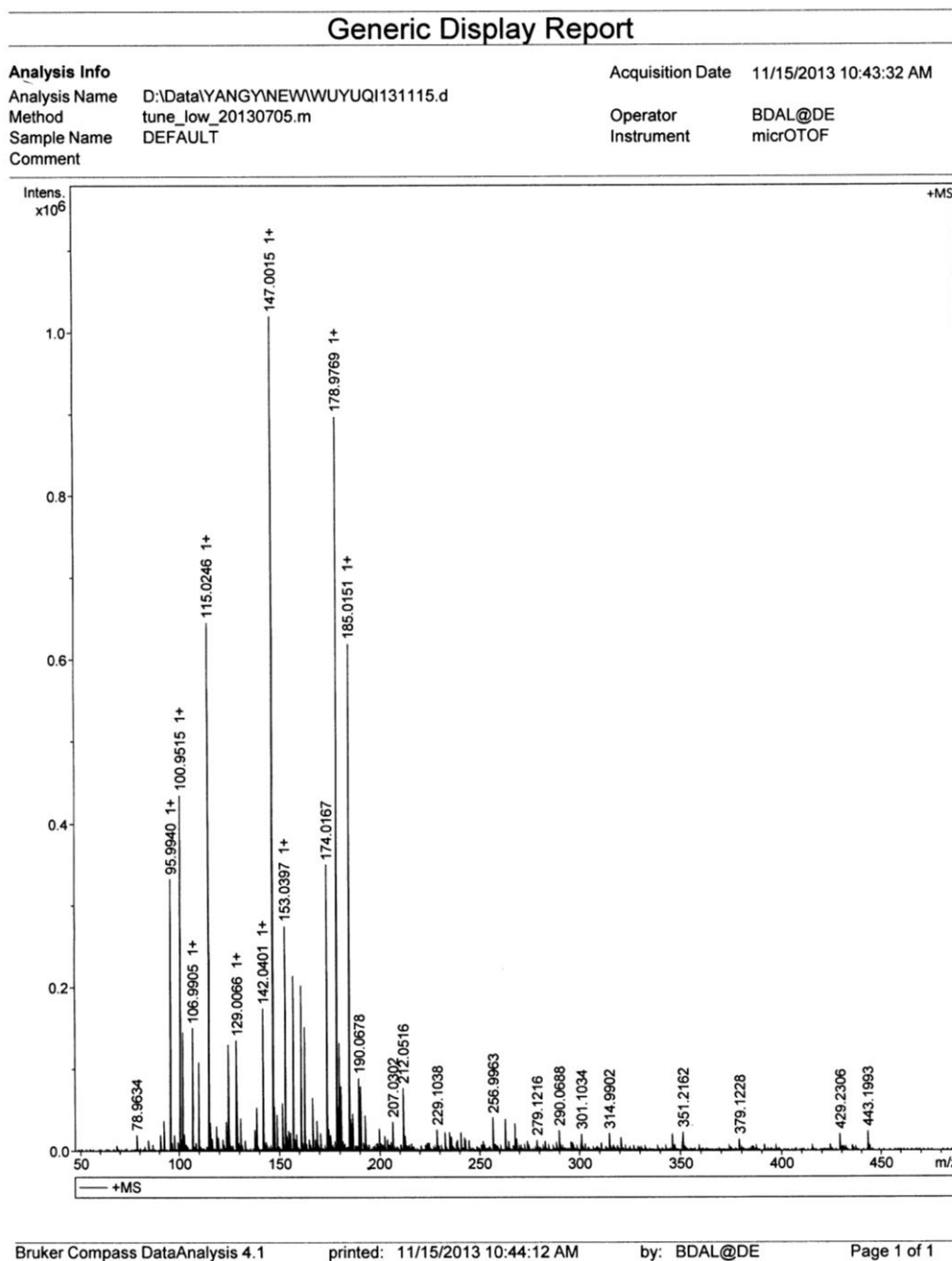


Figure S5. The ESI mass spectra of intermediates from RhB photo-decolorization over bouquet-like Bi_2O_3 (Sample B).

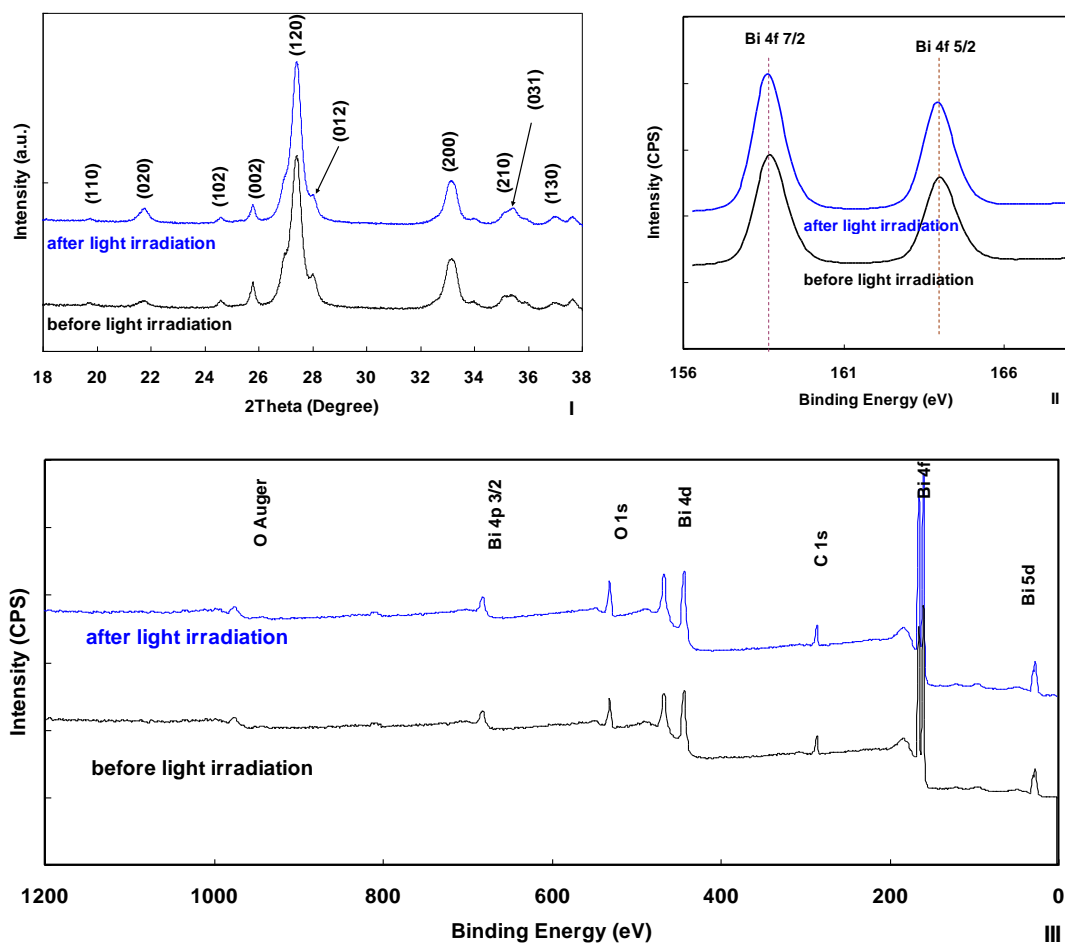


Figure S6. The comparison of the XRD pattern (I) and XPS spectra of bouquet-like Bi_2O_3 (II: Bi 4f narrow scans III: survey scans for Sample C) before and after 4-cycle-reaction light irradiation