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Enhanced azo dye decolorization through charge transmission by σ-Sb^{3+}-azo complexes on amorphous Sb_2S_3 under visible light irradiation

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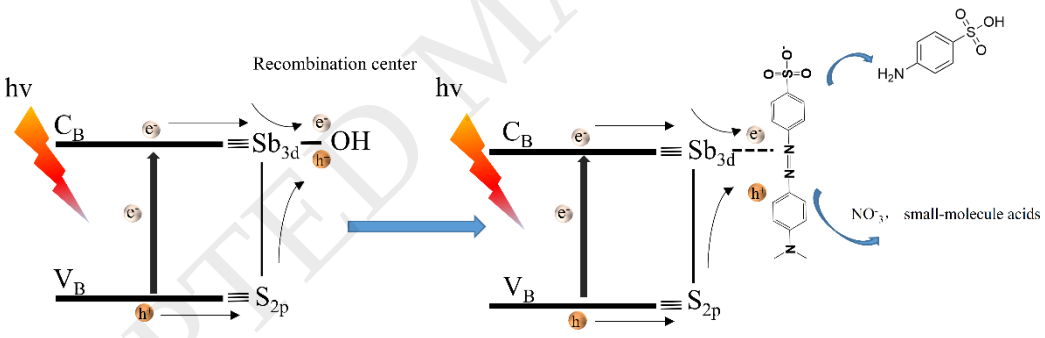
Graphical Abstract



Scheme 1. Proposed photocatalytic mechanism for A- Sb_2S_3.

Highlights

- Amorphous Sb_2S_3 exhibited higher photocatalytic activity than crystalline samples.
- Sb^{3+} complexed with MO by σ bonding to the lone pairs of N of azo group onto Sb_2S_3.
- MO decolorization via adsorbed azo group redox by σ-Sb-(-N=N-) charges transmission.
- The OH^- on Sb_2S_3 were e-h^+ recombination center by its strong interaction with Sb^{3+}.