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# Enhanced azo dye decolorization through charge transmission by $\sigma$ -Sb<sup>3+</sup>-azo complexes on amorphous Sb<sub>2</sub>S<sub>3</sub> under visible light irradiation

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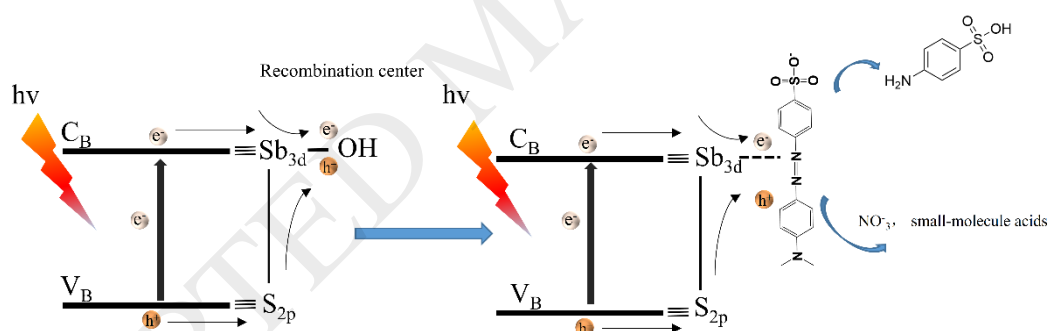
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## Graphical Abstract



Scheme 1. Proposed photocatalytic mechanism for A- Sb<sub>2</sub>S<sub>3</sub>.

## Highlights

- Amorphous Sb<sub>2</sub>S<sub>3</sub> exhibited higher photocatalytic activity than crystalline samples.
- Sb<sup>3+</sup> complexed with MO by  $\sigma$  bonding to the lone pairs of N of azo group onto Sb<sub>2</sub>S<sub>3</sub>.
- MO decolorization via adsorbed azo group redox by  $\sigma$ -Sb-(-N=N-) charges transmission.
- The OH<sup>-</sup> on Sb<sub>2</sub>S<sub>3</sub> were e<sup>-</sup>-h<sup>+</sup> recombination center by its strong interaction with Sb<sup>3+</sup>.

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