Title: Understanding the lattice composition directed *in situ* structural disorder for enhanced visible light photocatalytic activity in Bismuth iron niobate pyrochlore

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Understanding the lattice composition directed *in situ* structural disorder for enhanced visible light photocatalytic activity in Bismuth iron niobate pyrochlore

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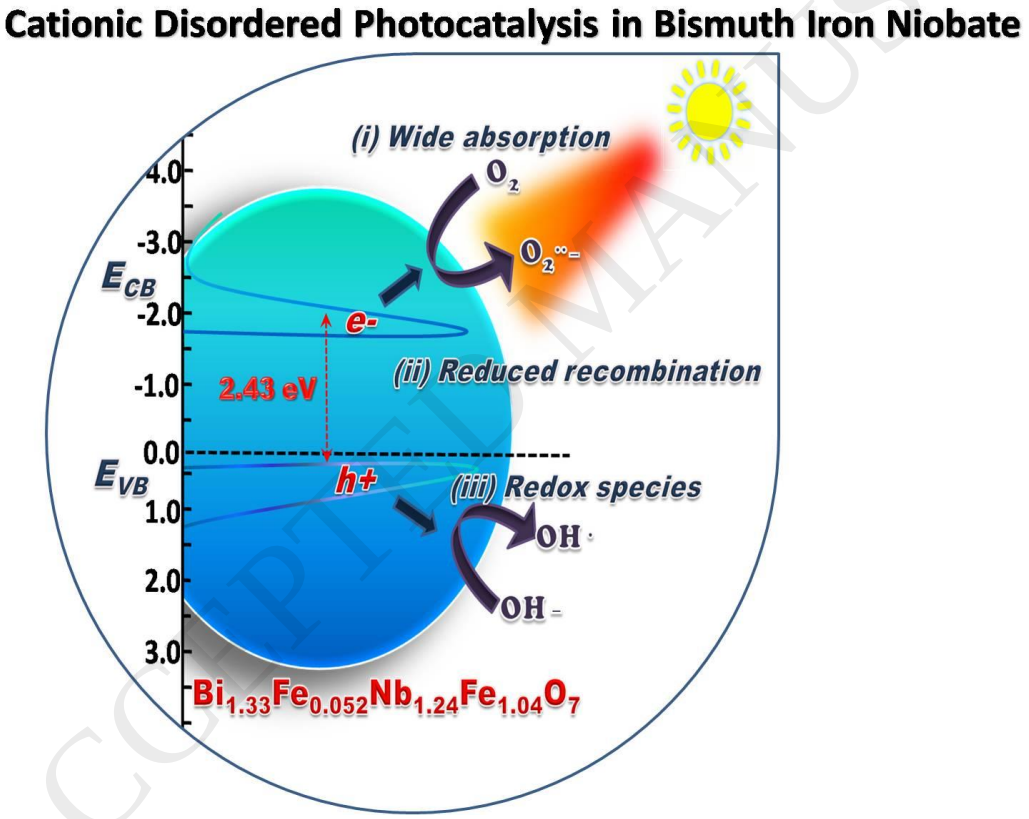
Graphical abstract



Highlights

- Cationic disorder dependent photocatalytic efficiency of Bismuth iron niobate.
- Bi endowed with lone pair of $6s^2$ electrons is perturbed by nonstoichiometry.
- Lattice composition dictated degree of disordered photocatalytic efficiency is found.