

Role of BiOX nanocomposites for enhancing the photocatalytic activity

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Abstract

Bismuth oxyhalides (BiOX, X= F, Cl, Br and I) and their composites have been successfully synthesized using different leaf extracts. Leaf extract is known to possess anti-oxidant and stabilizing properties that aids in the immediate reduction and stabilization of the metal ions into their corresponding nanostructures. To obtain a better understanding of the results, the BiOX and their composites were also synthesized by hydrolysis method (without leaf extract). The synthesized photocatalyst was characterized using SEM, XRD, FTIR, UV-vis DRS etc.

A comparative study was envisaged between both BiOX and its composites towards the degradation of organic pollutants. The results revealed that leaf extract mediated BiOX and its composites led to much higher degradation of organic pollutants as compared to the without leaf extract synthesized BiOX photocatalysts under visible light irradiation. The enhanced photocatalytic activity was attributed to the role of leaf extract that added some additional features to BiOX and their composites such as smaller size, mesoporous structure with higher surface area, lower band gap and effective separation of electron-hole pairs.

Biography

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