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Copper Doping for Enhancing Photocatalytic Efficiency of Barium Ferrite in Degradation of Atrazine under Visible Light

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Abstract : The citrate manner (Pechini method) was utilized in elaboration of a novel Nano-sized BaFe(1-x)CuxO3 (x=0.01, 0.05 and 0.10). The prepared photocatalysts were characterized by x-ray diffraction, diffuse reflectance, TEM and the surface area. The prepared samples have a mixture of cubic perovskite structure (main) and orthorhombic phases. The effect of different loads of copper as dopant on the structural properties as well as the photocatalytic activity was demonstrated. The lattice parameter and the unit cell volume of the prepared materials are given. Doping with copper increased the photocatalytic activity of BaFeO3 several times in abstraction of hazardous atrazine that causes acute problems in drinking water treatment facilities. This may be reasoned to low band gap energy of copper doped BaFe(1-x)CuxO3 attributed to oxygen vacancies formation.

Keywords : photocatalysis, nano-sized, BaFeO3, copper doping, atrazine
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