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Ciprofloxacin degradation using BiVO4 chemically modified with low amounts (0.1-1wt) of Rubidium

Nowadays safe water access is decreasing due to many factors as demographic explosion and water pollution. Among the principal water pollutants, there is the pharmaceutical compounds, e.i. ciprofloxacin, which after human consume, it is integrates to water as contaminant agent. This research is a contribution toward materials development for chemical compounds remotion. In this work, BiVO4 chemically modified with Rubidium at different concentrations (0.1-1%) were synthetized by hydrothermal synthesis method. The present work explores the influence of Rubidium in BiVO4 lattice and their photocatalytic activity. Catalysts powders were obtained in one-pot hydrothermal method, and characterized via X-Ray diffraction, Fourier-Transform Infrared spectroscopy, N2 adsorption-desorption test, UV-Vis-NIR spectroscopy and X-Ray photoelectron spectroscopy. As results, for concentrations of 0.1 and 0.5% Rb on BiVO4, the photo-degradation of ciprofloxacin evaluated via UV-Vis spectroscopy reach to be more than 58% in 4 hours with rubidium implementation samples, compared with 48% of CIP degradation in 4 hours with pure BiVO4. The influence of synthesis parameters in the physical and chemical properties is discussed.

Keywords

Hydrothermal, Ciprofloxacin, BiVO4

Reference

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Author approval

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