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One-step fabrication of carbon decorated $\text{Co}_3\text{O}_4/\text{BiVO}_4$ p-n heterostructure for enhanced visible-light photocatalytic properties

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Abstract

A novel carbon modified $\text{Co}_3\text{O}_4/\text{BiVO}_4$ p-n heterojunction photocatalyst ($\text{Co}_3\text{O}_4/\text{BiVO}_4/\text{C}$) is prepared via one-step method. The $\text{Co}_3\text{O}_4/\text{BiVO}_4/\text{C}$ photocatalyst is characterized by SEM, Raman, UV-vis DRS, electrochemical performance analysis and so forth. In addition, the optimum activity of the $\text{Co}_3\text{O}_4/\text{BiVO}_4/\text{C}$ p-n heterojunction is higher than that of pure Co_3O_4 and BiVO_4 for the degradation of tetracycline under visible light. The improved photocatalytic property could be ascribed to the enhanced light absorption and the facilitated separation of photogenerated charge carriers through forming a p-n heterojunction. Furthermore, the $\text{Co}_3\text{O}_4/\text{BiVO}_4/\text{C}$ has superior magnetic properties, recyclability and stability, which is conducive to practical application.

Keywords: Yeast; Co_3O_4 ; BiVO_4 ; Antibiotics; Visible light.

1. Introduction

Environment pollution is one of the most urgent issues facing modern society due to the accelerated development of industrialization. As a result, photocatalysis has received extensive attention for water treatment, pollutant removal and so on [1-4].

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