

عنوان مقاله:

A Comparative study on photocatalytic degradation of quinalphos pesticide using ZnO/MgO and ZnO/SnO₂ nanocomposites

محل انتشار:

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خلاصه مقاله:

The photocatalytic degradation of Quinalphos, an organic pesticide, in the presence of modified ZnO metal composites, namely ZnO/MgO and ZnO/SnO₂, was investigated at normal pH in the presence of sunlight. The structural and morphological properties of both the synthesized nanocomposites were characterised by different spectral techniques. The effect of pesticide concentration, catalyst dosage, and pH on the photocatalytic degradation efficiency was investigated. The photocatalytic activity of the respective nanocomposites on the degradation of Quinalphos was confirmed by UV-Visible spectroscopy. Moreover, the recycling ability of the prepared nanocomposites was also conducted and analyzed. However, the photocatalytic efficiency of ZnO/SnO₂ nanocomposite was more efficient than the ZnO/MgO nanocomposite for the treatment of pesticide effluent, achieving 98 % and 95 % of total organic carbon (TOC) and chemical oxygen demand (COD) removals, respectively. The present study therefore concluded that the ZnO/SnO₂ nanocomposite was the more stable and well organised composite, which could be the preferred treatment of industrial and agricultural wastewater containing organic contaminants within a short span of time.

کلمات کلیدی:

Organic contaminants, Quinalphos, Nanocomposite, Photocatalyst, Photocatalytic degradation

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