

عنوان مقاله:

Synthesis and Characterization of $\text{TiO}_2/\text{CuO}/\text{WO}_3$ Ternary Composite and its Application as Photocatalyst

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خلاصه مقاله:

Photocatalytic removal of water and air pollution has received much attention today. Many photocatalysts based on semiconductors have been developed and used. Binary and even ternary composites have been developed to solve the drawback of semiconductors, including high band gaps and short life time of charge carriers. In this study, a three-component composite of $\text{TiO}_2/\text{CuO}/\text{WO}_3$ was synthesized by adding WO_3 to TiO_2/CuO . Their structural properties were evaluated by analyzes X-ray diffraction (XRD), field-emission scanning electron microscopy (FESEM), and diffusive reflectance spectra (DRS) and their performance by methylene orange dye removal. The results of XRD and SEM analysis showed purity and uniform distribution of elements. The combination of $\text{TiO}_2/10\%\text{CuO}$ and $15\%\text{WO}_3$ (with band gap 2.66 eV showed the highest rate constant of dye removal (0.0301 min^{-1}).

کلمات کلیدی:

Ternary composite, TiO_2/CuO , $\text{TiO}_2/\text{CuO}/\text{WO}_3$, photocatalyst

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