

عنوان مقاله:

Photocatalytic degradation of rhodamine B dye using hydrothermally synthesized NaBiTiO₃

محل انتشار:

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خلاصه مقاله:

The increasing pollution of water bodies due to the discharge of dyes from various industries has become a serious environmental concern. Rhodamine B, a commonly used dye in the textile industry, is known to be toxic and carcinogenic. In this study, we investigated the photocatalytic degradation of Rhodamine B using hydrothermally synthesized NaBiTiO₃ as a catalyst. The NaBiTiO₃ photocatalyst was prepared via a simple hydrothermal method and characterized using X-ray diffraction (XRD) technique. The photocatalytic activity of the NaBiTiO₃ was evaluated by measuring the degradation of RhB under visible light irradiation. The results showed that the NaBiTiO₃ photocatalyst exhibited excellent photocatalytic activity with a RhB degradation rate of 99% after 180 minutes of irradiation. The high photocatalytic activity of NaBiTiO₃ can be attributed to its unique crystal structure, which provides a large surface area and enhances the separation and transfer of photogenerated electron-hole pairs. Furthermore, the hydrothermal synthesis method facilitated the formation of well-defined NaBiTiO₃ nanoparticles with improved crystallinity and uniformity. Overall, the hydrothermally synthesized NaBiTiO₃ photocatalyst showed great potential for the photocatalytic degradation of RhB and can be considered as a promising candidate for the treatment of organic pollutants in wastewater. Further studies are required to optimize the catalyst synthesis and explore its application in large-scale wastewater treatment systems.

کلمات کلیدی:

Photocatalyst, Wastewater treatment, Sodium Bismuth titanate perovskite, Hydrothermal method, Rhodamine B

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