عنوان مقاله:

Polymer-Assisted Synthesis and Characterization of Nickel Aluminate Nanoparticles for Photodegradation of Methylene Blue

محل انتشار:

فصلنامه مواد پیشرفته و فرآوری, دوره 9, شماره 4 (سال: 1400)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

A simple polymer-assisted wet chemical method was used to synthesize NiAl۲O۴ nanopowder. The photocatalytic properties of synthesized powders were investigated for the degradation of methylene blue. For this aim, metal salts and polymeric precursors were dissolved in water, and then a crosslinker was added till a gel was formed. The product was calcined to produce nanopowders. XRD results confirmed the formation of nickel aluminate with spinel structure. In addition, the findings showed that the produced NiAl۲O۴ nanopowders have a particle size range between ۳۵ to ۱۰۰ nm with a uniform particle size distribution. The optical properties of the samples showed that the bandgap energy of NiAl۲O۴ is about ۳.۴۴ eV. The nickel aluminate nanopowders demonstrated high photocatalytic activity for photodegradation of methylene blue, which could be attributed to their small particle sizes. It seems that the polymer-assisted wet chemical synthesis may open up an effective route for the production of ceramic photocatalyst nanopowders with high quality.

کلمات کلیدی:

NiAl۲O۴, Nanopowders, Photocatalytic Activity, Wet chemical method