عنوان مقاله:

Effect of Ultraviolet and Solar Radiation on Photocatalytic Dye (Black-E and Congo Red) Degradation Using Copper Oxide Nanostructure Particles

محل انتشار:

مجله علم مواد و مهندسی ایران, دوره 18, شماره 3 (سال: 1400)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

Copper oxide (CuO) nanostructure particles were prepared using KOH/NaOH catalyst by low cost precipitation method and characterized by powder X-ray diffraction (PXRD), scanning electron microscope (SEM) and energy dispersive X-ray spectra (EDX) analysis. The photocatalytic dye degradation study of pure CuO nanostructure particles are analysed against two azo dyes (Direct black ۳۸ (Black-E) and Congo red) under ultraviolet (UV) and solar irradiation. The release of major active species (*OH) in the photocatalytic degradation by as prepared CuO nanostructure particles were investigated by photoluminescence (PL) spectra with two different excitation wavelength (۳۲۵and ۳۵۵nm). The band gap of CuO nanostructure particles was calculated from diffuse reflectance spectra. The photocatalytic effect of CuO nanostructure particles is confirmed from the UV – Vis and photoluminescence spectra and also, further confirmed from the kinetic studies under UV and solar radiations. The photocatalytic degradation results revealed that ۱۶.۳۵% and ۷.۵% of black E and Congo red dye was degraded under UV, while it was ۴۷.۲% and ۱۷.۶% under solar light. The influence of pH on the photodegradation and change in the reaction temperature under solar irradiation were also analysed

کلمات کلیدی:

copper oxide, photocatalytic activity, azo dyes, dyedegradation, precipitation method