

عنوان مقاله:

The effect of particle size on photocatalytic degradation of oxytetracycline by ZnO nanoparticles

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خلاصه مقاله:

The toxicity of oxytetracycline (OTC) antibiotic remains in the environment and threatens the life of living things. In this research, two series of ZnO nanoparticle catalysts with different particle sizes were prepared.. The structural and optical characteristics of the samples were analyzed and the photocatalytic degradation of OTC was investigated under a 100 W visible light irradiation. The samples prepared using zinc nitrate and zinc acetate showed different photocatalytic performance. The catalysts prepared at lower calcination temperatures show higher photocatalytic performance due to the active surface of the particles. The intensity of the peaks in the XRD patterns of samples also increases with increasing calcination temperature, which confirms the increase in the size of the nanoparticles. The decrease in particle size with increasing calcination temperature was confirmed by FESEM images. On the other hand, the band gap energy was reduced by decreasing the calcination temperature, which increases the performance of the photocatalytic activity. The 27 nm ZnO nanoparticles prepared using zinc nitrate showed 100 % degradation efficiency. As a result, we reached the maximum performance of pure ZnO by only controlling the size and morphology, without making nanocomposite or doping different elements. google is broken

کلمات کلیدی:

Zinc oxide, catalysts, Visible light, oxytetracycline

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