عنوان مقاله:
Removal of linear alkyl benzene sulfonates from wastewater using photo fenton process

محل انتشار:
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خلاصه مقاله:
Urban sewage discharge, detergent industries and detergents that contain linear alkyl benzene sulfonates can have adverse effects on the environment. The photo fenton process which consists of oxidation in the combination of hydrogen peroxide ($H_2O_2$), ferrous ions ($Fe^{2+}$) and UV irradiation is known as a feasible method to remove some pollutants from wastewaters. In this study, the photo fenton process as an advanced oxidation process was used to remove the linear alkyl benzene sulfonate (LAS) from the industrial wastewaters. In order to investigate several factors affecting the removal efficiency, a special homemade reactor was designed including a 51 watts UV lamp. Moreover, the effective factors including pH, irradiation time and the concentrations of $H_2O_2$ and $Fe^{2+}$ were examined according to a fractional factorial experimental design (Taguchi method, 4 factors in 4 levels). For measuring LAS, methylene blue was added to samples and after ion pair formation, extraction was occurred into chloroform. Finally, the LAS content was measured spectrophotometrically. Finally, the best conditions for the removal of LAS were determined via analysis of variance. At optimal conditions ($Fe^{2+}$ concentration 0.02 mg/L; $H_2O_2$: 0.51 mg/L; pH 3.3 and irradiation time of 3 minutes) 99% removal of LAS was obtained. Experimental results demonstrated that the proposed method has high reliability in the case of LAS removal which also can be used to remove this compound from water resources.

کلمات کلیدی:
Linear alkyl benzene sulfonates, Wastewater, Photo-fenton, Experimental design

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این صفحه به معنای تاییدیه نمایه سازی مقاله در پایگاه استندار سیویلیکا می‌باشد. در هر لحظه به منظور تایید اصلاح این گواهی می‌توانید وضعیت ثبت مقاله را از طریق لینک فوق به صورت آنلاین کنترل نمایید.