

论文

NO₂⁻存在条件下冰相中对氯苯酚的光转化

康春莉, 高红杰, 郭平, 唐晓剑, 张歌珊, 刘星娟, 董德明

吉林大学环境与资源学院, 长春 130012

摘要:

以125 W高压汞灯为光源, 在低温(-12—-14 °C)条件下研究了冰相中有亚硝酸盐存在时对氯苯酚(4-CP)的光转化反应. 考察了各种因素对冰相中4-CP光转化的影响以及冰相中4-CP光转化的动力学和机理. 实验结果表明, 4-CP初始浓度、亚硝酸盐初始浓度、pH值和光强对冰相中4-CP光转化均有较大影响. 在180 min内, 4-CP和总有机碳(TOC)的转化率分别达到80%和32%, 在实验条件下, NO₂⁻的存在能够改变4-CP在冰相中光转化的产物和机理.

关键词: 对氯苯酚 亚硝酸盐 冰 光转化 机理

Photoconversion of *p*-Chlorophenol in Ice and the Presence of Nitrite

KANG Chun-Li*, GAO Hong-Jie, GUO Ping, TANG Xiao-Jian, ZHANG Ge-Shan, LIU Xing-Juan, DONG De-Ming

College of Environment and Resources, Jilin University, Changchun 130023, China

Abstract:

Environmental photochemistry of organic pollutants is an important research field, but the ice photochemistry of organic pollutants is still a unknown field and it is attracting more and more attention recently. The ice photochemistry of *p*-chlorophenol(4-CP), as an important pollutant, is studied a little. In this paper, the UV lamp(125 W high-pressure mercury lamp) was lamp-house and the photoreaction of 4-CP in ice was the object of this research. Some influencing factors and the kinetics and mechanism of the photoconversion was investigated in the range of the temperature of -12—-14 °C in the presence of nitrite. According to the results, the initial concentration of the 4-CP, the initial concentration of the nitrite, a common photoreaction reagent in environment, the initial pH and the intensity of the light had serious effects on the conversion of the 4-CP. The disposal rates of 4-CP and TOC in ice respectively reached 80% and 32% within 180 min. Four reaction products are characterized by MS-GC analysis, it is not completely the same as that reported by other researchers. On this basis the photoconversion mechanism of 4-CP is deduced. It is concluded that the mechanism and photoproducts of 4-CP photoconversion in ice would be changed because of the presence of NO₂⁻.

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