

周康,霍明昕,汪小雄,姜成春.Si-FeOOH催化臭氧氧化降解活性艳红MX-5B的效能研究[J].环境科学学报,2013,33(4):997-1003

Si-FeOOH催化臭氧氧化降解活性艳红MX-5B的效能研究 Catalytic ozonation of active red MX-5B in water with Si-FeOOH

关键词: [臭氧](#) [Si-FeOOH](#) [活性艳红MX-5B](#) [催化氧化](#)

基金项目: [国家自然科学基金资助项目\(No.50978169\)](#); [深圳市科技工贸和信息化委员会资助项目\(No.JC200903180722A\)](#)

作者 单位

周康 1. 东北师范大学城市与环境科学学院, 长春 130024;

2. 中国市政工程东北设计研究总院, 长春 130021

霍明昕 东北师范大学城市与环境科学学院, 长春 130024

汪小雄 深圳职业技术学院建筑与环境工程学院, 深圳 518055

姜成春 深圳职业技术学院建筑与环境工程学院, 深圳 518055

摘要: 通过共沉淀的方法在羟基氧化铁(FeOOH)合成过程中掺入硅(Si)来制备硅羟基氧化铁(Si-FeOOH)催化剂,比较其与FeOOH在物理强度等方面的差异,同时研究Si-FeOOH催化臭氧氧化降解活性艳红的效能、推断反应机理、考察各种因素对脱色率的影响.结果表明:相对于FeOOH,Si-FeOOH的物理强度有所提高,在水溶液中不易破碎;Si-FeOOH催化臭氧氧化降解活性艳红效果显著,比单独臭氧氧化的脱色率有较大提高;催化过程遵循自由基反应机理;脱色率随着臭氧浓度的增加而升高,在应用Si-FeOOH催化臭氧对染料脱色时存在最佳催化剂投量;Si-FeOOH在中性条件下其催化活性显著,催化剂性能稳定,可重复利用.

Abstract: In this study, Si was added into FeOOH to prepare Si-FeOOH, and the physical intensity and other properties of Si-FeOOH and FeOOH were compared. The influencing factors of Si-FeOOH-catalyzed ozone on red MX-5B degradation were studied, and the reaction mechanism and the efficiency of decolorization ratio were investigated. The result indicated that, compared with FeOOH, Si-FeOOH had higher physical intensity and was not likely to be crushed in water solution. The iron dissolution was effectively prevented because of the addition of Si, and the effect of Si-FeOOH-catalyzed ozone on red MX-5B degradation was obvious. The decolorization ratio of Si-FeOOH was improved, and the catalytic process followed free radical reaction mechanism. The decolorization ratios increased in response to the increased ozone concentration, whereas the dosage of the catalyst existed an optimum value. Si-FeOOH had a distinct catalytic activity under the neutral condition. The capability of the catalyst was stable, and the catalyst can be recycled and reused.

Key words: [ozone](#) [Si-FeOOH](#) [reactive red MX-5B](#) [catalytic ozonation](#)

摘要点击次数: 122 全文下载次数: 123

[关闭](#)[下载PDF阅读器](#)

您是第2217820位访问者

主办单位: 中国科学院生态环境研究中心

单位地址: 北京市海淀区双清路18号 邮编: 100085

服务热线: 010-62941073 传真: 010-62941073 Email: hjkxxb@rcees.ac.cn

本系统由北京勤云科技发展有限公司设计