

Fenton氧化-絮凝耦合去除水中As(III)的机理

Mechanisms of As(III) removal from synthetic wastewater by Fenton oxidation coupled with flocculation

投稿时间: 2011-06-20 最后修改时间: 2011-07-16

DOI:

中文关键词: [氧化-絮凝耦合](#) [As\(III\)](#) [沉降性能](#) [Fenton](#)

英文关键词: [oxidation-flocculation coupled](#) [As\(III\)](#) [sedimentation performance](#) [Fenton](#)

基金项目:湖北省教育厅重点研究项目(B200611003)

作者	单位
朱小丽	武汉科技大学资源与环境工程学院, 武汉 430081
刘红	武汉科技大学资源与环境工程学院, 武汉 430081
范先媛	武汉科技大学资源与环境工程学院, 武汉 430081
周志辉	武汉科技大学资源与环境工程学院, 武汉 430081

摘要点击次数: 84

全文下载次数: 84

中文摘要:

为了改善亚铁(Fe(II))絮凝去除水中As(III)的效果,对Fe(II)/H₂O₂(Fenton试剂)氧化-絮凝耦合工艺进行了研究。以5 mg/L的As(III)模拟废水为处理对象,对比了Fenton氧化-絮凝耦合处理As(III)和单一Fe(II)絮凝的效果。结果表明:单一絮凝对总砷的去除率只有60%左右,而氧化-絮凝耦合的去除率可达99.3%;氧化-絮凝耦合产生的絮体粒度约为单一絮凝的3倍,明显增强了絮凝沉降性能。SEM、XRD、BET测试结果表明:Fenton氧化-絮凝耦合去除水中As(III)产生的絮体初级粒子是一种无定形纳米颗粒;氧化-絮凝耦合反应产生的Fe(II)/Fe(III)混合态水解形成纳米胶体,对As(V)的絮凝吸附优于As(III)。氧化还原电位的测定表明As(III)被迅速氧化为As(V),且是一种原位氧化-絮凝反应过程。

英文摘要:

In order to improve the removal effect of As(III) from wastewater by ferrous salt(Fe(II)) flocculation process, a H₂O₂/Fe(II)(Fenton reagent) oxidation-flocculation coupled process was studied. 5 mg/L arsenite (As(III)) model wastewater was treated by Fenton oxidation-flocculation coupled process and single Fe(II) flocculation process respectively. The results showed that the total arsenic removal of single flocculation process was only about 60%, while oxidation-flocculation coupled process can reach 99.3%. In addition, compared with the single flocculation process, the size of flocs generated by oxidation-flocculation coupled process tripled, which enhanced the sedimentation performance obviously. Through the analysis of SEM, XRD and BET, the primary particles of flocs generated by Fenton oxidation-flocculation coupled process for the removal of As(III) were amorphous nano-particles, and the nano size colloid hydrolyzed by the Fe(II)/Fe(III) mixed phase, which generated in the oxidation-flocculation coupled process, had a superior As(V) flocculation-adsorption capability than that of As(III). The results of redox potential indicated that As(III) was oxidized to As(V) effectively and the process was an in-situ oxidation-flocculation reaction.

[查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

关闭

你是第448133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

编辑部服务热线：010-62941074 传真：010-62941074 邮箱：cjee@cees.ac.cn

技术支持：北京勤云科技发展有限公司