

[快速检索](#)[检索](#) [高级检索](#)[首页](#)[稿约信息](#)[编者论坛](#)[编委会](#)[关于本刊](#)[订购本刊](#)[下载中心](#)

张芳,穆浩荣,郭慧芳,白淑琴.利用浊度分析法研究硅酸对磷酸钙沉淀的影响[J].环境科学学报,2014,34(9):2292-2297

利用浊度分析法研究硅酸对磷酸钙沉淀的影响

Study of the effect of silicic acid on the precipitation of calcium phosphate by turbidity analysis

关键词: [磷酸钙沉淀](#) [硅酸](#) [浊度](#) [XRD分析](#) [抑制作用](#)基金项目: [国家自然科学基金 \(No. 21066006\)](#); [内蒙古自治区自然科学基金 \(No. 2014MS0202\)](#)

作者 单位

张 芳 内蒙古大学环境与资源学院,呼和浩特 010021

穆浩荣 内蒙古大学环境与资源学院,呼和浩特 010021

郭慧芳 内蒙古大学环境与资源学院,呼和浩特 010021

白淑琴 内蒙古大学环境与资源学院,呼和浩特 010021

摘要: 磷酸钙沉淀法是从污水中回收磷的最常用的方法之一.本文通过测定溶液浊度的方法研究了钙磷比为2:1的条件下pH和硅酸对磷酸钙沉淀的影响.结果发现, pH低于6时,短时间内溶液中不能形成磷酸钙沉淀;而pH大于7时,溶液中迅速生成磷酸钙沉淀,且随pH的增加沉淀速度变大.XRD谱图表明, pH=7或8时都生成热力学最稳定的羟基磷酸钙沉淀.7 mg·L⁻¹单硅酸的存在使生成的磷酸钙溶液的初始浊度从10 NTU增加到20 NTU,使磷酸钙沉淀速度加倍,说明单硅酸能促进磷酸钙的沉淀速度.而聚硅酸使溶液初始浊度从10 NTU降低到0 NTU,抑制了磷酸钙的沉淀速度,表明不同形态的硅酸对磷酸钙的沉淀速度有不同的影响.XRD谱图表明,硅酸存在时,溶液中除了生成羟基磷酸钙外,还生成其他类型的磷酸钙.

Abstract: Precipitation of calcium phosphate is one of the most common methods to remove phosphate from wastewater. The effects of pH and silicic acid on the precipitation of calcium phosphate were investigated under the Ca/P = 2 by turbidity analysis method. When the pH was less than 6, the precipitation of calcium phosphate didn't occur in a short period. When the pH was more than 7, the precipitation of calcium phosphate occurred immediately, and the precipitation rate of calcium phosphate was increased with the increasing of pH. The XDR spectra showed that the precipitate species of calcium phosphate were hydroxyl calcium phosphate, which was thermodynamically most stable species. The initial turbidity of solution was increased from 10 NTU to 20 NTU in the presence of 7 mg·L⁻¹ monosilicic acid, suggesting that the precipitation rate was promoted two times by monosilicic acid. However, the presence of polysilicic acid decreased the initial turbidity of solution from 10 NTU to zero and inhibited the rate of precipitation. This facts show that the different forms of silicic acid play different roles in the precipitation rate of calcium phosphate. According to the XRD patterns of precipitates, which generated under presence of silicic acid system, the precipitate includes hydroxyl calcium phosphate and other calcium phosphate species under the presence of silicic acid condition.

Key words: [precipitation of calcium phosphate](#) [silicate](#) [turbidity](#) [XRD analysis](#) [inhibition](#)

摘要点击次数: 1057 全文下载次数: 1929

[关闭](#)[下载PDF阅读器](#)

您是第27653216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: hjxxb@cees.ac.cn

本系统由北京勤云科技发展有限公司设计