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微波增强有机膨润土合成-废水处理一体化吸附染料的效率与机理

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英文关键词 [organobentonite](#) [surfactant](#) [microwave](#) [dyestuff](#) [integrative sorption](#) [wastewater treatment](#)

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中文摘要

提出了利用微波增强有机膨润土合成-废水处理一体化技术吸附处理染料的方法,探讨了微波增强一体化技术吸附处理中性红的适宜条件、饱和吸附量、吸附反应动力学和作用机理.结果表明,影响吸附处理效果因素的主次顺序为表面活性剂用量、土量和处理时间,微波增强一体化吸附处理中性红的适宜条件为土/水=1/1000(质量比),CPC浓度120mg/L(相当于原土的阳离子交换容量28%),微波处理时间60s.与传统的有机膨润土吸附处理方法相比,微波增强一体化技术处理较高浓度染料废水的效果较好,饱和吸附量提高,表面活性剂用量大幅减少,吸附处理染料的速度大幅增加.

英文摘要

Microwave-enhanced integrative sorption (MEIS) of dye to mixture of surfactant and bentonite was put forward. The order of factor for integrative method was obtained by the orthogonal experiment. The optimal conditions, properties, kinetics and mechanisms for microwave-enhanced integrative sorption of Neutral Red S-BR to bentonite from water were investigated in detail. Comparative study on decolorization rates of Neutral Red S-BR by other sorption method and MEIS from water were conducted. It is concluded that the order of factor for integrative method is amount of surfactant, bentonite and microwave time. The optimal condition for MEIS is that the ratio of amount of bentonite and water is equal to 1/1000, the concentration of cetylpyridinium chloride (CPC) is 120mg/L (equivalent to 28% cation exchange capacity of bentonite) and microwave time is 60s. Comparative with organobentonite, the decolorization rates of Neutral Red S-BR to bentonite are greatly increased by MEIS at higher concentration of dye, amount of surfactant is greatly decreased, and the saturated sorption capacity and the reactive rate of sorption of dye to bentonite are greatly increased by microwave.

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