

عنوان مقاله:

Modeling phosphorus removal from wastewater using ultrasound via response surface methodology

محل انتشار:

ششمین کنفرانس بین المللی پژوهش های کاربردی در علوم و مهندسی (سال: 1401)

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خلاصه مقاله:

Among different treatment methods for phosphorus removal from wastewater, ultrasonic process received great attention due to its high removal efficient and environmentally friendly nature. This study aimed to model ultrasonic treatment process for phosphorus removal from wastewater and to optimize operational parameters. For this purpose, response surface methodology (RSM) was applied to design experiments based on effective independent variables including retention time (۱.۵-۹.۵ h), ultrasonic power (۴۰-۳۶۰ w), and the volume of sample (۲۰-۱۸۰ mL). According to the RSM results, a logic model for phosphorus removal was presented with a ۹۵% confidence interval. The results showed that time and ultrasonic power have the most positive effect and the samples volume have negative effect on phosphorus removal efficiency. The optimum removal of phosphorus (۹۸.۷۳%) was obtained at the retention time of ۷.۹۴ h, ultrasonic power of ۲۹۶.۱۹ w, and the volume of ۵۴.۵۲ ml. The presented model can be used for phosphorus removal prediction during ultrasonic process for wastewater treatment.

کلمات کلیدی:

Ultrasonic, Wastewater treatment, Phosphorus removal, Modeling, RSM

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