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USE OF CHITOSAN-IRON(III) FOR THE ADSORPTION OF THE DYE ACID RED 29: ISOTHERM, KINETIC, REUSE AND FACTORIAL DESIGN

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Abstract

In this study, chitosan-iron(III) was used as adsorbent of the dye acid red 29. The effect of pH, temperature and concentration of the dye on the adsorption capacity were evaluated. The maximum adsorption capacity was calculated from the adsorption isotherms which were well fitted by Sips isotherm model. The process followed the kinetic model of pseudo-second-order. The activation parameters showed that the adsorption process is spontaneous and favorable. A decrease in adsorption capacity was observed with increasing salt concentration. The removal of the acid red 29 was optimized using a 3³ factorial design, and the initial pH of the dye solution had a significant effect.

Key words: acid red 29, chitosan-iron, factorial design, textile wastewater

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