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## APPLICATION OF ARTIFICIAL NEURAL NETWORK ON MODELING OF REACTIVE BLUE 19 REMOVAL BY MODIFIED POMEGRANATE RESIDUAL

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### Abstract

The Artificial Neural Network (ANN) model was used to predict dye (Reactive Blue 19) removal efficiency from aqueous solution using modified pomegranate residual based on 124 experimental sets. Three-layer ANN models with different neurons numbers at a hidden layer were developed. The optimum network yielded a network error of 0.0054 and 0.9606 for mean square error and coefficient of determination, respectively. Furthermore, sensitivity analysis of the network revealed that the adsorbent dose and initial dye concentration were the most and least important variables, respectively. The effect of operation parameters such as initial pH, contact time, adsorbent dose, and initial dye concentration was examined and compared with the ANN prediction. The optimum conditions were determined to be 11, 15 min, 5 g/L, and 150 mg/L for initial pH, contact time, adsorbent dose, and initial dye concentration, respectively.

**Keywords:** adsorption, artificial neural network, modified pomegranate residual, reactive blue 19, sensitivity analysis

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