## Artificial neural network based modeling for the degradation of tannery wastewater in sequential batch reactor

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## ABSTRACT

Any wastewater treatment system must have a complete model to provide a tool for predicting the system's performance and to serve as the foundation for regulating the process's operation. This would save running expenses while also examining the stability of the environmental balance. This process is challenging and reaches a high degree of non-linearity due to the presence of bio-organic elements that are difficult to define using mechanistic techniques. Predicting plant operating characteristics using standard experimental approaches is time consuming and difficult, making it difficult to regulate such operations effectively. Using a radial function neural network, a research was successfully simulated to analyse the performance of sequential batch reactors on a lab scale. The information gathered is used in a neural network to treat tannery waste water in a sequential batch reactor. Degradation of organic compounds is represented in this method by a trained neural network. The degradation investigations used different dilutions such as 25%, 50%, 75%, and 100% for an initial substrate concentration of 6,240 mg COD/L and at different hydraulic retention times (5, 4, 3, and 2 d). The neural network-based model is thought to have been effective in establishing the system's properties with high precision. This research uses an artificial neural network (ANN) modelling technique to obtain the knowledge base of a genuine SBR, which is then used as a process model.

Keywords: Wastewater treatment; Artificial neural network (ANN); Multiple linear regression and absolute standard deviation; Radial basis

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