RSM and ANN modeling for electro-oxidation of simulated wastewater using CSTER

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\textbf{ABSTRACT}

In this study, response surface methodology (RSM) and artificial neural network (ANN) were employed to develop prediction models for Acid Red 88 dye removal from synthetic wastewater using electro-oxidation. Experiments were carried out in a continuous stirred tank electrochemical reactor (CSTER) in once through approach using Ruthenium oxide-coated Titanium as anode and stainless steel sheet as cathode. The four operational parameters such as, effluent flow rate, initial dye concentration, current density, and pH, on chemical oxygen demand removal has been observed as a response. Experiments were conducted as per RSM of Box–Behnken design. The operating parameters were optimized and the models were developed using RSM and ANN. The ANN model of three hidden layers with two neuron networks, 4-2-2-2-1, matches well with the experimental observation.

\textit{Keywords:} Acid Red 88; Artificial neural network; Chemical oxygen demand; Electro-oxidation; Response surface methodology

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