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MODELING METHODOLOGY BASED ON ARTIFICIAL IMMUNE SYSTEM ALGORITHM AND NEURAL NETWORKS APPLIED TO REMOVAL OF HEAVY METALS FROM RESIDUAL WATERS

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Abstract

Artificial Immune Systems (AIS) and Neural Networks (NN) are biologically inspired methods that, due to their flexibility and performance have a huge potential for modeling complex processes from chemical engineering field. In this paper, an algorithm based on Clonal Selection (CS) principle of AIS acts as an optimizer for a neural network, the proposed methodology being named CS-NN. The optimal neural model is applied to simulate the removal of heavy metals from residual waters. In order to determine the performance of CS-NN, a series of simulations based on exprimental data were performed. The results obtained indicated that the methdology is able to determine a good model, even when using data with high measurement errors.

Key words: adsorption, clonal selection, heavy metals, neural networks

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