

عنوان مقاله:

Prediction of Corrosion Rate for Carbon Steel in Soil Environment by Artificial Neural Network and Genetic Algorithm

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خلاصه مقاله:

In this study, the corrosion rates for St³Y carbon steel in some soil types with different conditions were measured. The effects of the parameters of moisture amount, soil's particle size and salt's concentration were determined by the mass loss method. An Artificial Neural Network (ANN) model with three inputs and one output was established to simulate the experimental data. It was observed that Levenberg–Marquardt algorithm with hyperbolic tangent sigmoid transfer function provided the best results in training with the lowest MSE and MAE compared to the other methods in the model. The R values for training, validation, and test were presented and the value of ۰.۹۸۶۸۴ was achieved for the complete data set which demonstrate a high level of ANN performance. The Genetic Algorithm (GA) was also used to find optimum inputs for the target of minimum corrosion rate value. The results showed a good agreement between the model prediction and experimental values.

کلمات کلیدی:

Artificial Neural Network (ANN), Genetic Algorithm (GA), Corrosion, weight loss, Soil Environment

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