

عنوان مقاله:

Simulation in processing polymers with the approach of heuristic and meta-heuristic algorithms

محل انتشار:

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خلاصه مقاله:

Artificial Neural Networks have been a hot topic of research for many years, there are still certain issues regarding the development of an ANN model, as a result of which there is no absolute guarantee that the model will perform well for the problem in the hands of a large number of different approaches for To tackle this problem, they have investigated all aspects of the ANN modeling approach, from training data collection and pre-processing to training schemes and algorithms. Increasing attention especially to the proposal of a systematic method to create a suitable architecture unlike the current common method that calls for an iterative trial and error process, which is time-consuming and brings uncertain results. This paper presents such a method to determine the best architecture and is based on the use of a genetic algorithm (GA) and the development of new criteria that determine the performance of ANN as well as its A three-layer feed forward artificial neural network model with three input neurons, one output neuron and two hidden neurons is built to predict the compressive strength of processed polyester composites. These composites were made using fabric fabrics with ۰, ۳ and ۶% by weight of thermoplastic adhesive. A good agreement was obtained between the measured and predicted values. The model was tested at a low average error level of ۳.۲۸%. In addition, predictions were compared with models obtained from a multiple linear regression model. It was found that the model has better predictions for experimental data. Also, it was subjected to sensitivity analysis to obtain its response to a sensitivity analysis. As a result, it has the ability to provide the .desired level of compressive strength values for composites processed with the addition of thermoplastic adhesives

کلمات کلیدی:

meta-heuristic algorithms, gray wolf algorithm, band gap, Genetic algorithm

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