

Modelling and Optimisation of Oil Palm Trunk Core Biodelignification using Neural Network and Genetic Algorithm

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Abstract.

In this paper, artificial neural network had been implemented to model the biodelignification process of oil palm trunk core using *Pleurotus Ostreatus*. The generated model was used as the fitness function for the genetic algorithm to obtain the optimise lignin left percentage. The 4-10-5-2-1 network architecture had been used to model the process and 10 models were generated randomly. These models were used to find the optimised the network output using genetic algorithm search. The modelling results had improved the accuracy and error when using the artificial neural network modelling with training MSE of 0.0096 and testing MSE of 0.2108. The results also show an improved lignin left around 7.55% when the network output was optimised by the genetic algorithm. The application of neural network and genetic algorithm had improved the delignification process.

Keywords: Modelling; Optimisation; Biodelignification; Artificial Neural Network; Genetic Algorithm