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Application of MLP-ANN strategy to predict higher heating value of biomass in terms of proximate analysis

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ABSTRACT

One of the important parameters in development of bioenergy industry and economical investigation of fuels is higher heating value (HHV) of biomass in the present study; multi-layer perceptron (MLP) artificial neural network was applied to predict HHV of biomass in terms of volatile matters (VMs), fixed carbon (FC), and ash content (ASH). The purposed algorithm was trained and tested by utilizing 350 experimental data points which extracted from literature. Based on results, the MLP-ANN has great ability to estimate HHV for biomass. This method can be developed as a user-friendly software for prediction of HHV of the fuel in terms of proximate analysis. The predicting software can be wide applicable due to its high degree of precision for prediction of HHV as function of three input variables. As the computational study is cheaper and easier than

the experimental study so the developed software can be considered as alternative for laboratorial study.

KEYWORDS:

Biomass energy HHV MLP neural network