Energy Sources, Part A: Recovery, Utilization, and Environmental Effects ›
Volume 40, 2018 - Issue 24

332 Views | 29 CrossRef citations to date | 0 Altmetric

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Application of MLP-ANN as a novel predictive method for prediction of the higher heating value of biomass in terms of ultimate analysis

Ayda Darvishan, Hesam Bakhshi, Mojtaba Madadkhani, Mahdi Mir & Amin Bemani

Pages 2960-2966 | Received 05 Jun 2018, Accepted 03 Aug 2018, Published online: 27 Aug 2018

Cite this article https://doi.org/10.1080/15567036.2018.1514437 Check for updates

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ABSTRACT

In the recent years, the energy issue is known as one of the main entries for economic and social development of human. So the biomass fuels as one of the approaches for supplying energy become the attractive topic for investigation. The higher heating value (HHV) is a key parameter for evaluation of energy of biomasses; so in the present study, a novel work was done to predict HHV as a function of ultimate analysis by utilization of multi-layer perceptron artificial neural network (MLP-ANN). To this end, a total number of 78 actual data were extracted from reliable references for training and validation of the model. The predicted HHVs were compared with the experimental data graphically and statistically, and the obtained results expressed that the MLP-ANN has

a great potential for estimation of HHV of biomasses; so this approach can be used as a simple and accurate tool for forecasting HHV in terms of ultimate analysis. Based on the obtained results, this approach becomes one of the applicable softwares in industries.

KEYWORDS:

Biomass | energy source | HHV | MLP-ANN | predicting model

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