

MODELING OF BIO-OIL YIELD FROM FAST PYROLYSIS OF SAWDUST

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Abstract

Bio-oil has received great attention due to the environmental concerns associated with the usage of fossil fuels and the predicted inability of these fuels to cope with future increases in energy demands. In this work an existing kinetic model equation has been modified using polynomial equations in conjunction with experimental data for six different sawdust types using the least squares method. The existing Model was modified with a linear equation (Model B), quadratic equation (Model C), and also by a cubic equation (Model D). The new models for bio-oil yield predictions obtained from the sawdust types show very low average errors of 1.2% - 4.4% compared to the experimental results and high correlation coefficients in the range 0.95 - 0.99 attesting to their reliability. Model C has been found to be the best for the spruce sawdust while Model D is the best for other sawdust types mentioned.

Keywords: Modeling; Bio-oil yield; Sawdust; Fast Pyrolysis.