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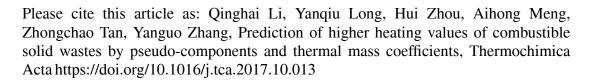
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ACCEPTED MANUSCRIPT

Prediction of higher heating values of combustible solid wastes by

pseudo-components and thermal mass coefficients

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Highlights

- A method for predicting the higher heating values was proposed.
- The method is based on the pseudo-components and thermogravimetric analysis.
- Thermal mass coefficients are calculated from TG curves.
- The higher heating values are obtained by weighted average.

Abstract

A method was developed for the prediction of the higher heating values (HHVs) of combustible solid wastes (CSWs) by considering the thermal mass coefficients and the HHVs of pseudo-components. The pseudo-components include cellulose, hemicellulose, lignin, and starch for biomass based CSWs, and PE, PVC, PP, PS and PET for plastic CSWs. The thermal mass coefficients of the pseudo-components were determined by thermal gravimetric analysis (TGA). The TGA curves were used to determine the corresponding thermal mass coefficients by linear regression. The proposed model was also validated by experiments using 49 types of CSWs.

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