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Comparison of the gasifier char-resin blends with gasifier soot-resin blends using different characterization techniques

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Abstract content
 (Max 300 words)
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Biomass gasification is a chemical process whereby organic material is thermally broken down inside a gasifier for the generation of syngas. The syngas produced is then used to drive the engine that drives the generator and generates electricity. This project investigated the chemical composition of the by-products of the gasification process with specific reference to their potential usage in other areas. The analysis of the blended materials was achieved using FTIR, SEM/EDX and Bomb calorimeter. FTIR confirmed the similar spectra in all char-resin blended ratios. For soot-resin, almost the same functional groups as observed in char-resin appeared except the broad peak shown around 3900 cm⁻¹ which was due to OH of carboxylic acids. SEM/EDX showed attractively bonded products of char-resin and soot-resin with varying elemental quantities for both materials. In bomb calorimeter measurements, 70%Resin-30%Char gave highest calorific value, followed by 50%Resin-50%Soot with values of 35.23MJ/kg and 34.75MJ/kg consecutively. The final paper will present the obtained results.

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