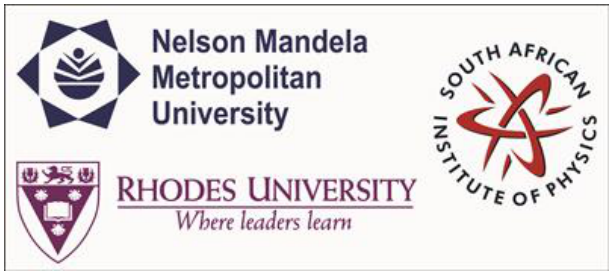

Contribution ID: **394** Type: **Poster Presentation**

Morphological and elemental properties of sugarcane bagasse for gasification purposes

Wednesday, 1 July 2015 16:10 (1h 50m)

Abstract content
   (Max 300 words)
Formatting &
Special chars

Gasification of biomass for production of heat and power has become an attractive research area in recent years. This is as a result of the challenges associated with the use of non-renewable resources such as fossil fuels. Gasification, when compared to other thermochemical conversion mechanisms such as combustion and pyrolysis, has proven to be an efficient means of converting biomass to a gaseous product with more flexible applications. Sugarcane bagasse is the fibrous residue remaining after the extraction of the sucrose-rich juice from sugarcane stalks. Previously excess sugarcane bagasse was burned as a means of solid waste disposal but has presently been identified as a valuable feedstock for gasification and combustion in boilers. Sugarcane basically contains high levels of silicon (Si) and oxygen (O2) as a plant. These react to form silica during the gasification of sugarcane bagasse. Silica has impacts on the operation of a downdraft gasifier and affects the gas production. Channeling, slagging and sintering of ash and other by products in the gasifiers are some of the problems caused by silica.
Sugarcane bagasse varies in chemical composition and physical properties which is traceable to the climate and soil in which it is grown, variety of cane, level of washing and the harvesting method employed. Hence characterization of sugarcane is essential for its efficient use as a feedstock during gasification. This research addresses the impacts of silica during the gasification of sugarcane bagasse in a downdraft gasifier. Silica levels will be traced from the sugarcane bagasse before and after gasification. Washed and unwashed bagasse will be used for the experiments. Detailed elemental and morphological characterization of washed, unwashed and depithed sugarcane bagasse will be presented in this report.

Apply to be
 considered for a student
   award (Yes / No)?

yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

Main supervisor (name and email)
and his / her institution

Prof. S. Mamphweli
SMamphweli@ufh.ac.za

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

no

Please indicate whether
this abstract may be
published online
(Yes / No)

yes

Primary author: Mr KULA, Mpumezo (University of Fort Hare)

Co-authors: Dr OKOH, Omobola (University of Fort Hare); Mr REDDY, Prashant (DUT); Prof. MAMPHWELI, Sampson (University of Fort Hare)

Presenter: Mr KULA, Mpumezo (University of Fort Hare)

Session Classification: Poster2

Track Classification: Track F - Applied Physics