

Accepted Manuscript

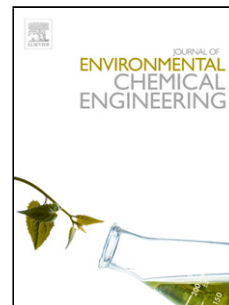
Title: A Review of Waste Tyre Gasification

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PII: S2213-3437(17)30495-5

DOI: <https://doi.org/10.1016/j.jece.2017.09.057>

Reference: JECE 1905



To appear in:

Received date: 29-6-2017

Revised date: 21-9-2017

Accepted date: 25-9-2017

Please cite this article as: B.O.Oboirien, B.C.North, A Review of Waste Tyre Gasification, Journal of Environmental Chemical Engineering <https://doi.org/10.1016/j.jece.2017.09.057>

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A Review of Waste Tyre Gasification

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Highlights

- A review of waste tyre gasification has been done.
- The co-gasification of waste tyres and biomass is advantageous
- A techno-economic model for tyre gasification is required.
- Loss of activity of catalyst in the gasification and co-gasification of waste tyres requires further research

Abstract

There has not been any comprehensive review on waste tyre gasification. This review evaluates the status of global research on gasification of waste tyres and the gaps in knowledge. Some recommendations for future research work are made.

Most of the studies on the gasification of tyres are in the production of syngas. Others are the production of hydrogen gas with high purity, activated carbon and carbon nanotubes. There are few studies on the numerical modelling of the tyre gasification process. It is recommended that the conditions for the optimal production of hydrogen and carbon nanotubes and other value-added products be carried out. The investigation of loss of activity of catalyst in the gasification and co-gasification of waste tyres requires further research. The co-gasification of waste tyres and biomass is advantageous in increasing the rate of tyre gasification and the reduction in the cost of production of methanol. However, there are few studies on the co-gasification tyres and biomass. A database of reaction kinetics parameters such as activation energy of tyre- char/biomass-char blends for different biomass feedstock is required. Lastly, a detailed techno-economic analysis of tyre gasification and co-gasification with biomass is required.

Key Words: Waste Tyre, Gasification, Energy recovery, Syngas, Carbon Products.

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