

**INVESTIGATION OF LIQUEFACTION RESIDUES FROM EMPTY FRUIT BUNCH (EFB)
AND HIGH-DENSITY POLYETHYLENE (HDPE) AS A GASIFICATION A SOURCE FOR
BIOFUEL PRODUCTION**

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ABSTRACT

INVESTIGATION OF LIQUEFACTION RESIDUES FROM EMPTY FRUIT BUNCH (EFB) AND HIGH-DENSITY POLYETHYLENE (HDPE) AS A GASIFICATION A SOURCE FOR BIOFUEL PRODUCTION

Every year, the oil palm industry in Malaysia produces a tonne of biomass residue that is largely wasted and left to decompose. The excessive usage of fossil fuels has come under scrutiny as a result of the development of alternative fuels that are both clean and renewable. Biomass has emerged as a leading contender among renewable energy sources over the course of the past three decades. EFB can be recycled into biofuel, which is beneficial to the environment and cuts down on the amount of trash produced. In order to produce biofuel, pyrolysis is frequently utilised in the processing of energy from waste biomass (EFB) as well as high-density polyethylene (HDPE). For these reasons, thermogravimetric analysis (TGA) is seen to be a promising alternative method for proximate analysis. From this study also know that, the different ratio of EFB and HDPE have significantly influenced by the number of functional groups of the produced chars by using Fourier Transform Infrared analyser (FTIR). The fuel ratio was calculated, the level of the suitability of the residue was determined whether it can continue to be used in the gasification process. In this study, it has been shown that the residue consisting of 75% EFB and 50% EFB can be used for the gasification process. The ideal fuel ratio for the gasification process is between 0.1 and 1.0.