

**BIODIESEL PRODUCTION VIA
TRANSESTERIFICATION OF WASTE PALM OIL USING
Mg/Al₂O₃ AS HETEROGENEOUS CATALYST**

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ABSTRACT

BIODIESEL PRODUCTION VIA TRANSESTERIFICATION OF WASTE PALM OIL USING Mg/Al₂O₃ AS HETEROGENEOUS CATALYST

Two main types of biofuels are bioethanol and biodiesel. Biodiesel also known as FAME is a renewable environmental friendly fuel and has caught the public interest. The Mg/Al₂O₃ catalyst used in this study was prepared by IWI method and was calcined at 1000°C. After that, the catalyst was characterized by using FTIR and TGA. The parameter studied were reaction time and catalyst loading. The highest percentages yield of biodiesel is 42.5% from one step transesterification reaction. The condition was 12:1 methanol to oil ratio, reaction temperature of 65°C, reaction time of 2 hours and 4 wt% catalyst loading. The esterification reaction was accomplished in the existing of H₂SO₄ as a common acid catalyst to reduce the amount of free fatty acid (FFA). After that, the acid value of the waste palm oil should be less than 1 mg KOH/g oil. The biodiesel obtained were analyze by using FTIR and GC-MC. The catalyst has low reusability because the used catalyst surface has been contaminated after the reaction. Thus, the catalyst is not suitable to be used for various cycles.

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