

ABSTRACT

TRANSESTERIFICATION PALM OIL WITH METHANOL AND SILICA BASED HETEROGENEOUS CATALYSTS RICE HUSK (MgO-SiO₂)

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This study was carried out to investigate the potential of MgO-SiO₂ synthesized using sol-gel technique from rice husk silica and magnesium nitrate as a heterogeneous catalyst for transesterification of palm oil. The performance of the catalyst was evaluated through a series of experiments aimed to study the effect of three kinetic variables, namely the amount of catalyst, temperature, and reaction time on the biodiesel yield obtained. The overall results demonstrated that the catalyst functioned quite well is the catalyst in sintering at a temperature of 900 ° C, as reflected by the percent of conversion and the biodiesel analysis using GC-MS. The kinetic variables investigated indicated that the optimum percent of conversion of 68,7% was achieved using 5% catalyst with reaction time of 30 minutes and temperature of 60 ° C. Characterization of catalyst using SEM revealed that the catalyst has relatively homogeneous surface, and according to the EDS result the catalyst has very high purity with the composition in accordance with the composition of the raw materials used. The biodiesel produced was found to have viscosity and cetane number in the range of Indonesian National Standard (SNI) for biodiesel, but slightly lower value of density.

Key Word: *Sol-Gel Methode, Rice husk silica, Catalyst Heterogenous, Transesterification.*