ABSTRACT

SYNTHESIS OF ZEOLITE-BASED RICE HUSK SILICA WITH ELECTROCHEMICAL METHOD AS COCONUT OIL TRANSESTERIFICATION CATALYST

By

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This study was carried out to invistigate transesterification of coconut oil with methanol using synthetic zeolite produced by electrochemical method as catalyst. Preparation of synthetis zeolites was undertaken at varied pHs of 4, 5, 6, 8, 10 and electrolysis times of 15, 30, 45, 50 minutes, with specified potential of 8V. A series of transesterification reaction was performed to select the zeolites capable to catalyse transesterification, and reaction time. The optimum conditions obtained for the transesterification reaction are the use of zeolite 5% by weight of reactant, the mole ratio of coconut oil to methanol of 1: 4, temperature of 70 ° C, and reaction time of 2 hours with the percent conversion of 100%. GC-MS analysis showed the presence of ten major peaks with the highest peak belongs to methyl myristate with relative amount of 21.03%. Transesterification product was found to meet some of the standards of SNI 04-7182-2006 for biodiesel, includes density (0.8895 g/mL), cetane number (73.4), and viscosity (5.49 mm^2/s). Zeolite with the best performance was characterized by SEM-EDX, BET, and XRD techniques.

Key Word: *synthetic zeolite, electrochemical, coconut oil, transesterification.*