

ABSTRACT

SYNTHESIS OF ZEOLITE-A FROM PUMICE SILICA AND ALUMINIUM FOIL AS A CATALYST FOR PYROLYSIS OF PALM OIL MILL EFFLUENT (POME)

By

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In this research, palm oil mill effluent (POME) was converted into liquid fuel by pyrolysis method using zeolite-A as a catalyst with various calcination temperature, to study the effect of it towards the characteristic of liquid fuel. Zeolite-A was synthesized from pumice silica and food grade aluminium foil with hydrothermal method at 100°C for 72 hours, then calcined at 600, 700, and 800°C for 6 hours. Synthesized zeolite-A was then characterized using XRD and SEM to ensure the formation of zeolite-A. Liquid fuel produced from the catalytic upgrading process using zeolite-A was analyzed using GC-MS to identify the components contained in the sample. The GC-MS results show the most optimum catalyst used for catalytic upgrading in terms of hydrocarbon was zeolite-A 700°C with relative percentage of 84.48%, and the least optimum was zeolite-A 800°C with relative percentage of 81.37%. In terms of hydrocarbon chain in range of bio gasoline, zeolite-A 600°C has the highest relative percentage of 47%, and the least optimum was zeolite-A 700°C with relative percentage of 36%.

Keywords: Palm oil mill effluent, liquid fuel, pyrolysis, zeolite-A, synthesized, pumice.