

## PENGARUH TEMPERATUR DAN KONSENTRASI KATALIS PADA CRACKING CANGKANG SAWIT MENJADI *CRUDE BIO-FUEL*

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### ABSTRACT

One of solid waste that produced by palm industry is palm oil shell. This waste abundant in Riau about 700.5 ton/day. The shell compositions are cellulosa, hemicellulosa, and lignine. That compounds can be cracked into crude biofuel in slurry reactor with NiMo/ZSM-5 catalyst. The objective of research to study the influence of cracking temperature (300, 310, 320, 330 °C) and concentration of catalyst (0.5; 1.5; 2.5; 3.5%) to yield of crude biofuel and to determine physical and chemical properties. Cracking process used 50 gram palm oil shell size -40+60 mesh, 500 mL silinap and rotation speed of mixing 300 rpm. The maximum yield was obtained 68.6% at temperature 330 °C and catalyst concentration NiMo/ZSM-5 2.5%. The physical properties of crude biofuel were calorimetric value (43.84 MJ/kg), density (1.01 g/mL), viscosity (13.27cSt), acid number (76.11 g NaOH/g sample) and flash point (64 °C). The GC-MS analysis result indicated dominant compounds in crude biofuel were acetic acid (33.94%), phenol (31.71%), furancarboxaldehyde (7.78%) and methanol (4.93%).

**Key words** : Catalyst, crude biofuel, palm oil shell

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