

## Konsentrasi Katalis dan Suhu Optimum pada Reaksi Esterifikasi menggunakan Katalis Zeolit Alam Aktif (ZAH) dalam Pembuatan Biodiesel dari Minyak Jelantah

<b>Title</b>	Konsentrasi Katalis dan Suhu Optimum pada Reaksi Esterifikasi menggunakan Katalis Zeolit Alam Aktif (ZAH) dalam Pembuatan Biodiesel dari Minyak Jelantah
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<b>Accreditation</b>	
<b>Abstract</b>	<p>Transesterification of waste cooking oil into biodiesel using KOH catalyst with and without esterification process using activated natural zeolite (ZAH) catalyst has been carried out. Activation of the zeolite was done by refluxing with HCl 6M for 30 min, followed by calcining and oxidized at 500°C for 2 hours, consecutively. The transesterification without esterification process were done using KOH catalyst 1% (w/w) from oil and methanol weight and oil/methanol molar ratio 1:6 at 60°C. The esterification reaction was also done using ZAH catalyst then continued by transesterification using KOH catalyst in methanol media. In order to study the effect of ZAH catalyst concentration at constant temperature, the catalysts were varied, i.e. 0, 1, 2, and 3% (w/w). To investigate the effect of temperature, the experiments were done at various temperatures from 30, 45, 60, and 70°C at constant catalyst concentration. The conversion of biodiesel was determined by <sup>1</sup>H-NMR spectrometer and physical properties of biodiesel were determined using ASTM standard methods. The results showed that the transesterification using KOH catalyst without esterification produced biodiesel conversion of 53.29%. The optimum condition of biodiesel synthesis via esterification process were reached at 60°C and concentration of ZAH catalyst of 2% (w/w), that could give biodiesel conversion = 100.00%. The physical properties were conformed with biodiesel ASTM 2003b and Directorate General of Oil and Gas 2006 specification.</p>
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