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# Optimisation of Reaction Time and Methanol Consumption for Esterification of Palm Fatty Acids and its Kinetic Study

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**Abstract :** Palm fatty acids are chosen for esterification . The esterified oil is obtained in the presence of fatty acids and methanol. Various parameters are considered for the esterification of fatty acids. Amount of methanol has added in different molar ratio and vigorous stirring was employed at constant temperature. The heating schedule of complete reaction system is differed. These parameters lead effects in the product formation and its purity.

The esterification reaction of FFAs in the esterified production from PFAD in batch reactor system employing methane sulphonic acid as the catalyst has been studied. The optimum condition was observed at 14 hours has been studied , the amount of methanol added was 180gm , catalyst concentration of 1-2%(w/w) , stirring rate 400 rpm , and at reaction temperature of 60 – 75 °C . At the optimum condition , the achieved conversion of FFAs was found to be 99.17%. A kinetic model for the esterification of FFAs was established using the second – order homogeneous kinetic model involving the rate of mass transfer.

**Keywords:** esterification, optimisation, conversion, mechanism, kinetics.

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