

Biodiesel Production from Animal Fat Using Trans-Esterification Process with Zeolite as a Solid Catalyst to Improve the Efficiency of Production

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Abstract : The purpose of this study was to determine the ability of zeolite catalyst for the trans- esterification reaction in biodiesel production from animal fat. The ability of the zeolite as a catalyst is determined by the structure and composition of the zeolite. An important factor that determines the properties of zeolites in catalysis includes adsorption capability to the compound of the reactants. Zeolites with a pore size of specific properties selectively adsorbing molecules. A molecule can be adsorbed by either the zeolite cavities if the size and shape of the molecule in accordance with the size and shape of the cavity in the zeolite. At this time, it is common to use homogeneous catalysts for biodiesel. We know these catalysts have some disadvantages in its use. Such as the difficulty of separation of the product with the catalyst, the generation of waste that is harmful to the environment due to residual catalysts can't be reused, and the difficulty of handling and storage. But nowadays, solid catalyst developed technically to improve the efficiency of biodiesel production. In this case of study, we used trans-esterification process wherein the triglyceride is reacted with an alcohol with zeolite as a solid catalyst and it will produce biodiesel and glycerol as a byproduct. Development of solid catalyst seems to be the perfect solution to address the problems associated with homogeneous catalysts.

Keywords : biodiesel, animal fat, trans esterification, zeolite catalyst

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