

**Optimasi Pembuatan Biodiesel Dari Minyak Jelantah Dengan Katalis Basa Heterogen Campuran Cangkang Telur Ayam Dan Cangkang Keong Sawah**  
*(Optimization of Biodiesel Production from Used Cooking Oil with Base Catalysts Heterogeneous of Chicken Egg Shells and Crawfish Shells Mixture)*  
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**ABSTRACT**

*Biodiesel is a fuel that is made from methanol, catalysts, vegetable oils, animal fats and recycled used cooking oil. This research uses raw materials from used cooking oil. Used cooking oil has high levels of free fatty acids, so it is necessary to reduce free fatty acid levels to prevent saponification reactions. This research uses a heterogeneous base catalyst in the form of CaO from a mixture of chicken eggshells (*Gallus Gallus Domesticus*) and rice snail shells (*Pila Ampullacea*) and analyzes the quality of biodiesel based on SNI 7182: 2015 standards. Data analysis was carried out using the taguchi method with 2 factors and 3 levels, including the composition of the mixture of chicken eggshells (*Gallus Gallus Domesticus*) and rice snail shells (*Pila Ampullacea*) (30:70, 50:50, 70:30) and transesterification temperature (55 °C, 60 °C, 65 °C). Purification of crude biodiesel was carried out using the water washing method with distilled water. The highest biodiesel yield was 72.1% in sample A1B2 with a catalyst ratio of 30:70 and a temperature of 60 °C. The resulting test parameters were density of 902 kg/m<sup>3</sup>, kinematic viscosity of 4,78 cSt, methyl ester content of 92,44%, acid number of 0.7 mgKOH/g, cetane number of 62.2 and iodine number of 51,8%-mass.*

**Keywords:** *Biodiesel, Chicken Egg Shell, Conch Shell, Used Cooking Oil.*