

# **SYNTHESIS OF BIODIESEL FROM SOYBEAN AND PALM OIL USING ELECTROLYSIS METHOD BY TYPE-H REACTOR**

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## **Abstract**

Indonesia energy reserves of fossil fuels has decreased. It encourages the emergence of alternative energy such as biodiesel. Biodiesel is made from vegetable oils through an transesterification process. Vegetable oils are used as feedstock in the synthesis of biodiesel as renewable energy sources solutions. The research was conducted with two steps, the optimization of reactor type-H and synthesis process of biodiesel using the electrolysis method with reactor type-H. The reactor optimization with electrolysis process of water, by variation electrolyte NaCl (0.14; 0.28; 0.54 wt%) and without electrolyte. The results showed that the additional of 0.56% NaCl produced the highest current value. In this study, the synthesis of biodiesel was run in 0.5; 1; 1.5 and 2 hours of electrolysis time, molar ratio of vegetable oil to methanol (1: 6, 1:12, and 1:24), 0,56% w/v NaCl and 2% v/v water of total volum. The characterization of FAME from biodiesel was measured by GC-MS and FTIR. The results showed that of FAME was 1.41% in 1.5 hours of electrolysis time for soybean oil and 7.32% in 2 hours of electrolysis time for palm oil. The optimum results of molar ratio of vegetable oil to methanol at 1:24 with FAME was 67.91% and 70.78%, in each soybean oil and palm oil, the reaction at room temperature and voltage 18.6 V.

Keywords: *Biodiesel, Electrolysis, Soybean Oil, Palm Oil*