

# **WVO Derived Biodiesel from Microwave Transesterification Using Sodium Impregnated Oyster Shell as Catalyst**

Alberto Paulo Cercado

College of Engineering, Architecture and Technology, Capiz State University, Roxas City, Capiz,  
Philippines

**Abstract:** Biodiesel was produced from waste vegetable oil under microwave assisted transesterification using sodium impregnated oyster shell catalyst. The catalyst was prepared by impregnation method using different concentrations of Sodium Hydroxide Solution. Hammett indicators and X-ray Diffraction (XRD), were used to evaluate the characteristics of the catalysts. The catalysts were easily separated from WVO biodiesel mixture by filtration and reuse is possible without drop in its efficiency. The Fatty Acid Methyl Ester (FAME) yield of biodiesel if process parameters were optimized was 80%. Optimum process parameters were identified to be; methanol to oil ratio = 15:1; catalyst load = 20%; reaction time = 15 mins and microwave output power rate at 0.8 Kws.

**Keywords:** Biodiesel; catalyst; transesterification; microwave: methyl ester