**Highly thermal stable catalyst for deoxygenation jatropha oil under free hydrogen and solvent for hydrocarbons like diesel fuel with highly thermal flow properties**

## ABSTRACT

Jatropha oil is an oil that obtained from a plant known as Jatropha Curcas. This oil is used as a feedstock due to readily available in nature and will be less expensive compared to another feedstock. In this study, green diesel was produced through deoxygenation of Jatropha oil catalysed by Co15%-La25% bimetallic with activated carbon supported. These activated carbons were obtained through the calcination of the death tree before synthesized it through phosphorylation by mixing it with phosphoric acid for 12 hours at 160 oC before dopping it with Lanthanum and Cobalt metal through wet impregnation method. The physicochemical properties of the prepared catalyst were characterized by using Fourier-transform infrared(FTIR) spectroscopy, X-ray diffraction(XRD), field emission scanning electron microscopy (FESEM), thermogravimetric analysis (TGA), gas chromatography flame ionization detector(GC-FID) and gas chromatography mass spectrometry(GC-MS). The effect of catalyst loading, reaction time, and reaction temperature on deoxygenation of Jatropha oil were investigated. The thermal properties from TGA show that the catalyst was stable up to 500oC. The catalyst demonstrated a superior catalytic performance in deoxygenation reaction under optimal condition (5% catalyst loading, 3 hours and 350 oC), 80 % conversion of Jatropha oil to green diesel was achieved in 3 hours. Reusability test of the catalyst was examined and results showed that the synthesized catalyst could be reused up to 4 times with maintaining Jatropha oil conversion at above 50 %. In nutshell, the Co15%-La25% bimetallic with activated carbon support catalyst is recyclable, reusable and can be used to produced green diesel via deoxygenation of Jatropha oil.