

Biodiesel Obtained From The Cotton Oil Using Natural Clays, Pillared And Impregnated With Molybdenum Oxide

J. C. Marinho^{1,#}, J. R. Sheibler^{1,*}, A. A. Cutrim¹, M. W. N. C. Carvalho¹

¹Universidade Federal de Campina Grande – UFCG, Campus Universitário Bodocongó, Campina Grande –PB.

#janaina.esa@gmail.com

Biodiesel has emerged as an alternative to petroleum diesel having favorable characteristics to consumption for be derived from clean and renewable sources, not possessing responsible compounds for the greenhouse effect. Biodiesel consists on mixtures of esters obtained by esterification or transesterification reaction from feedstock with monoalcohol in the presence of a catalyst. Much has been researched on heterogeneous catalysts for biodiesel application by that possess the possibility of reuse and allowing the use of different fat sources. However, this study aimed to use chemically treated clay materials as catalysts on biodiesel obtaining using cotton oil by the transesterification reaction in ethyl. The clay material was pillared and chemically treated with molybdenum oxide by physical dispersion and were characterized by X-Ray Diffraction, X-ray Dispersive Energy, Electronic Microscopy Scanning and Spectroscopy in Infrared region by Fourier Transform. Through the characterizations results of the clay material, it was found successful in pillaring because of the clay basal spacing increase in its natural form and succeeded in metal impregnation on clay structure. The efficiency of catalysts was evaluated for biodiesel obtaining by converting oil into ester in two reaction systems (S1 - Autogenous pressure Batch Reactor and S2 - High Pressure Batch Reactor). The biodiesels were submitted to viscosity and gas chromatography analysis. Comparing the biodiesels results there was a reduction of 30 to 50% in viscosity using chemically modified clay with molybdenum oxide as a catalyst and conversion of oil into ester in about 50% according to gas chromatographic analysis. The catalyst that presented the best result of conversion of oil into ester was the pillared clay impregnated, obtaining a conversion of 53.57% into ethyl ester attributed to the fact that pillared clay has lower particle size and with molybdenum oxide, present acid sites to favoring the transesterification reaction.