ANALYSIS OF QUALITY OF PRODUCTION OF BIODIESEL FROM CRUDE AVOCADO OILS BY RAMAN AND INFRARED SPECTROSCOPY

L. A. Juárez Morán¹, J. Díaz Reyes²


Abstract:
The process of transesterification, also called alcoholsysis, is the method most commonly used for the production of biodiesel. Crude oil avocado variety Fuerte was extracted by centrifugation. To the crude avocado oil transesterification was reacted with methanol and two conventional catalyst (KOH and NaOH) for 1 hour at a temperature of 60°C. In this work the transesterification of crude oil, avocado class III extracted by centrifugation was analyzed by infrared and Raman spectroscopy. The transesterification was carried out with methanol and KOH. The oil-methanol molar ratio was varied 1:4, 1:6 y 1:8, while keeping constant the amount of catalyst, temperature and time. By FTIR measurements were found biodiesel characteristic peaks located at 1196 cm⁻¹ attributed to the stretching vibration of the methyl group and 1437 cm⁻¹ in the asymmetric bound CH₃, except the sample with molar ratio 1:4. By Raman spectroscopy some significant differences between the spectra and the sample oil after the transesterification process were observed. A shift of the band observed at 1750 to 1742 cm⁻¹ attributed to C = O was observed, which may suggest that there is no bond with the molecule of glycerin and a new peak appears at 863 cm⁻¹ attributed to ((νR−C=O and νC−C), which is due to formation of the methyl ester.