

Evaluation of Esters Production by Oleic Acid Epoxidation Reaction

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Abstract : In recent years a worldwide interest in renewable resources from the biomass has spurred the industry. In this work the chemical structure of oleic acid chains was modified by homogeneous and heterogeneous catalysis in order to produce esters. The homogeneous epoxidation was carried out at H₂O₂ to oleic acid unsaturation molar ratio of 20:1. The reaction temperature was 338 K and reaction time 16 h. Formic acid was used as catalyst. For heterogeneous catalysis reaction temperature was 343 K and reaction time 24 h. The esters production was carried out by heterogeneous catalysis of the epoxidized oleic acid and butanol using Mg/SBA-15 as catalyst. The resulting products were confirmed by NMR (1H and 13C) and FTIR spectroscopy. The products were characterized before and after each reaction. The catalysts were characterized by X-ray diffraction, X-ray fluorescence, thermogravimetric analysis (TGA) and BET surface areas. The results were satisfactory for the bioproducts formed.

Keywords : acid oleic, bioproduct, esters, epoxidation

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