

Lisandra, A, J., 2019, Preparation and Characterization of CuO/Mordenite Catalysts for Cracking Reactions in Biogasoline Synthesis of Palmitic Acid, Thesis under the guidance of Dr. Abdulloh, S.Si., M.Sc and Ahmadi Jaya Permana, S.Si., M.Sc., Department of Chemistry, Faculty of Science and Technology, Airlangga University, Surabaya

ABSTRACT

Biogasoline synthesis has been carried out with cracking reactions involving various catalysts and metal carriers. Therefore, in this research, preparations and characterization of CuO/mordenite catalysts for biogasoline synthesis were carried out through the cracking of palmitic acid. CuO/mordenite catalyst preparation using the natural mordenite Turen Malang impregnation method with CuSO₄ 1N solution and then calcined at 650°C. CuO/mordenite catalyst formed was characterized by X-Ray Diffraction, X-Ray Fluorescence, Fourier Transform Infrared, Barret-Joyner-Halenda Surface Area Analyzer method, and acidity test with pyridine-FTIR. Based on the analysis of the characterization showed that the crystalline-shaped catalyst with d-spacing changes is getting bigger from 8.9 Å to 9 Å. CuO/mordenite catalysts containing Cu in the form of oxide amounted to 59.17%, reinforced by the presence of Cu-O bonds at the absorption peak area of 459 cm⁻¹. The catalyst has a pore size of 11.83 nm including mesopore and only has a Lewis acid side of 79.9831 mmol/g. CuO/mordenite catalyst was used for the process of cracking palmitic acid at 300 °C with variations of time 1 hour, 2 hours and 3 hours. Cracked products were analyzed by Gas Chromatography-Mass Spectrometry (GC-MS). In a variation of 3 hours, it was able to convert palmitic acid to nearly 100% and produce biogasoline products in the form of ethylbenzene and xylene with% area of 13.17% and 1.65%.

Keywords: *CuO/mordenite, impregnation, cracking, palmitic acid and biogasoline*