

**Rahmah, Ulfa, 2019. Preparation and Characterization of Mn<sup>2+</sup>-mordenit Catalyst for Biogasoline Synthesis from Stearic Acid. This study is under guidance of Dr. Abdulloh, S.Si., M.Si dan Harsasi Setyawati, S.Si., M.Si., Departement of Chemistry, Faculty of Science an Technology, Airlangga University, Surabaya.**

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#### ABSTRACT

The purpose of this research are prepare and characterize Mn<sup>2+</sup>-mordenite from natural mordenite which is modified with the metal cation Mn<sup>2+</sup> as a catalyst for biogasoline synthesis from stearic acid. Obtained Mn<sup>2+</sup>-mordenite was characterized using X-ray diffraction (XRD), X-ray fluorescence (XRF), infrared spectroscopy, N<sub>2</sub> adsorption-desorption and acidity analysis. The catalytic activity test was carried out at 310°C and the cracking compound was tested by GC-MS. The result of XRD and XRF showed that Mn<sup>2+</sup>-mordenite was successfully modified with Mn<sup>2+</sup> ion which are characterized by the appearance of new peak and more Mn compositions. The result of N<sub>2</sub> adsorption-desorption showed that Mn<sup>2+</sup>-mordenite has pore size, pore volume and surface area respectively of 10.220 nm, 30.723 cm<sup>2</sup>/ g, 0.078 m<sup>2</sup>/ g. GC-MS chromatogram from product of cracking reaction showed the formation of hydrocarbons such as alkane-alkene, cyclic groups and kaboxyllic acids which have shorter carbon chain than stearic acid. Biogasoline compounds formed include undeconstructed 0.80% and dodecane 5.51%.

**Keyword** : modification, Mn<sup>2+</sup>-mordenite, biogasoline, stearic acid and cracking