SYNTHESIS OF MORDENITE ZEOLITE FROM KAOLIN AND ITS PHOTO-ASSISTED DEGRADATION TOWARDS METHYL ORANGE DYE

ABSTRACT

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The study on the synthesis of mordenite zeolite from kaolin and its Photo-assisted degradation towards methylene orange has been carried out. The main material used for synthesis of mordenite zeolite, kaolin. The synthesis was using hydrothermal processes. The synthesized mordenite zeolite was characterized using FTIR, XRD and SAA.

The IR analysis showed that the functional groups of the zeolite are as follows at 3671 cm^{-1} (-OH), 1028cm^{-1} (Si-O), 798 cm^{-1} (Al-O) and 455 cm^{-1} (Si-O and Al-O). The XRD image showed specific peaks at $2\Theta = 21{,}2^{o}$ dan $26{,}9^{o}$. The results, SAA indicate the surface area of mordenite is 7,9363 m^2/g, pore volume is 0.0130 cc/g, pore size is 3.2892 nm.

The experiment of adsorptivity of the mordenite as adsorben was carried out by using irradiation and without irradiation of methyl orange. The results showed that the degradation of methyl orange was up to 94,29% with radiation.

Keywords : kaolin, mordenite, and methyl orange