SYNTHESIS AND CHARACTERIZATION OF 2-METHYL-4-CHLOROPHENOXYACETIC ACID (MCPA) BY USING Ca-Al LAYERED DOUBLE HYDROXIDE (CAL)

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF 2-METHYL-4-CHLOROPHENOXYACETIC ACID (MCPA) BY USING Ca-Al LAYERED DOUBLE HYDROXIDE (CAL)

The herbicide used in agriculture industry 2-methyl-4-chlorophenoxyacetic acid (MCPA) has been successfully intercalated into the Ca-Al LDH by using co-precipitation method at the concentration of 0.5 M MCPA, pH 13.0 with Ca and Al molar ratio of 2:4. In this research, nanocomposites were synthesized and characterized using Powder X-Ray Diffraction (PXRD) and Attenuated Total Resonance Fourier Transform Infrared (ATR-FTIR). From PXRD results, the basal spacing of LDH shows an increase from 8.67 Å to 8.72 Å in Ca-Al LDH due to the insertion of anion MCPA into the interlayer region of Ca-Al LDH. Results from PXRD are then supported by ATR-FTIR results when the nitrate peaks intensity are decreases from 1353.52 cm^{-1} to 1364.73 cm^{-1} in the spectrum. The disappearance of absorption peak at 1592.83 cm^{-1} assigned to the C=O stretching and a new absorption peak of 1587.30 cm^{-1} were formed because of the asymmetric stretching vibration of COO^{-1} after intercalation has been successful. This study is then can be concluded that MCPA may be intercalate into Ca-Al LDH, thus the adverse effect of 2-methyl-4-chlorophenoxyacetic acid can be control and reduce.