

**SYNTHESIS AND CHARACTERIZATION OF SALICYLIC ACID
WITH ZINC-ALUMINIUM LAYERED DOUBLE HYDROXIDE VIA
ION EXCHANGE**

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF SALICYLIC ACID WITH ZINC-ALUMINIUM LAYERED DOUBLE HYDROXIDE VIA ION EXCHANGE

In this project, Zinc-Aluminium Layered Double Hydroxide (Zn-Al-LDH) have been prepared with a molar ratio, R4 (4:1) of $\text{Zn}(\text{NO}_3)_2$ and $\text{Al}(\text{NO}_3)_3$. The salicylic acid (SA) have been successfully intercalated into the inorganic host LDH by ion exchange method at a concentration of 0.3 M, The nanocomposites have been characterized and synthesized by using Powder X-Ray Diffraction and Fourier Transform Infrared. From the PXRD results, the basal spacing of the LDH expanded from 8.7 Å to 10.0 Å proving that the insertion of the large anion SA molecule into the interlayer of LDH was successful. Fourier transform infrared study further confirmed intercalation of SA into the interlayer of the LDH. The results showed that the nitrate peak in the LDH at 1351.72 cm^{-1} disappeared as the appearance of the SA peak into the intercalation compound which were at 3337.28 cm^{-1} , 1608.36 cm^{-1} , 1474.47 cm^{-1} , 1255.09 cm^{-1} and 1184.68 cm^{-1} indicate the OH stretching, C=O stretching, C=C stretching, C-O group and C-O-C frequency. The disappearance of absorption peak at 1682.72 cm^{-1} assigned to the C=O stretching mode and new peak of 1608.36 cm^{-1} were formed due to the asymmetric stretching vibration of COO^- group after the intercalation. From this results, FTIR data confirmed that the SA anions have been successfully intercalated in the LDH.