

**SYNTHESIS OF Zn- Al-3,4,5- TRIHYDROXYBENZOIC ACID –
LAYERED DOUBLE HYDROXIDE (LDH) BY DIRECT METHOD
AND ITS CONTROLLED RELEASE ACTIVITY**

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**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Chemistry
In the Faculty of Applied Sciences
Universiti Teknologi MARA**

JULY 2016

This Final Year Project Report entitled **“SYNTHESIS OF Zn-Al-3,4,5-TRIHYDROXYBENZOIC ACID- LAYERED DOUBLE HYDROXIDE (LDH) BY DIRECT METHOD AND ITS CONTROLLED RELEASE ACTIVITY”** was submitted by Siti Hafizah Aminuddin, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

SYNTHESIS OF Zn-Al-3,4,5-TRIHYDROXYBENZOIC ACID- LAYERED DOUBLE HYDROXIDE (LDH) BY DIRECT METHOD AND ITS CONTROLLED RELEASE ACTIVITY

Synthesis of new hybrid nanocomposite material zinc-aluminium-3,4,5-trihydroxybenzoic acid (Zn-Al-Gallic acid) was successfully attained by the direct method with a molar ratio of Zn to Al; R=4 at different concentration of 3,4,5-trihydroxybenzoic acid in the range between 0.05 M to 0.5 M. The synthesis pH is 7.0 ± 0.5 and keeps in constant. The result from intercalation of gallic acid anion into zinc-aluminium-layered double hydroxide (Zn-Al-LDH) prove that size of interlayer spacing increasing from 8.8 Å in the layered double hydroxide to 9.8 Å in the Zn-Al-Gallic acid nanocomposite observed from the PXRD diffractogram. FTIR spectrum of synthesis of Zn-Al-Gallic acid nanocomposite shows the similarities of the Zn-Al-LDH and the gallic acid absorption bands which confirmed the gallic acid absorb into LDH inorganic interlayer. The percentage loading of the gallic acid results around 47.13 % (w/w) successfully intercalates into the interlayer based on the calculation and data obtained from the CHNS analysis. GA reaches equilibrium at 72 % released at 150 min so it can reach the target area efficiently.