

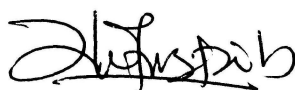
**ADSORPTION OF CADMIUM USING REGULAR  $\text{MgAlCO}_3$  –  
LAYERED DOUBLE HYDROXIDE (LDHs)**

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

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This Final Year Project Report entitled “**Adsorption of Cadmium Using Regular  $\text{MgAlCO}_3$  – Layered Double Hydroxide (LDHs)**” was submitted by Norzuyati Mohd Aris, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by



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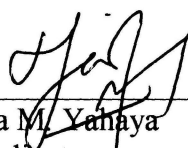
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Norzuyati Binti Mohd Aris

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## **ABSTRACT**

### **ADSORPTION OF CADMIUM USING REGULAR $\text{MgAlCO}_3$ – LAYERED DOUBLE HYDROXIDE (LDHs)**

Heavy metal pollution had become one of the environmental problems which cause several diseases either to human, animal or plant. In this study,  $\text{MgAlCO}_3$  layered double hydroxide was investigated as an alternative low-cost adsorbent for the removal of cadmium (Cd) from aqueous solution.  $\text{MgAlCO}_3$  was synthesized by using co-precipitation method at room temperature. X-ray diffractogram showed the presence of sharp and intense line with d-spacing 7.87215 Å and the interlayer spacing of the sample was found to be 3.92687 Å showed general features of hydrotalcite. The contact time required to obtain the maximum adsorption of cadmium was 180 min at the concentration of 150 ppm. The adsorption increases gradually as the pH and adsorbent dosage increase. However, the adsorption is inversely proportional with the increase of temperature which showed that this reaction is an exothermic reaction. The data on cadmium fit well on Langmuir and Freundlich. This study indicates that  $\text{MgAlCO}_3$ -LDHs has the ability to remove cadmium from aqueous solution.