

**UPTAKE OF REACTIVE RED 2 BY ZINC ALUMINIUM- NITRATE
HYDROTALCITE**

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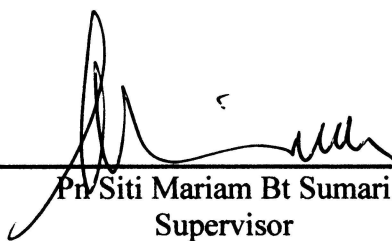
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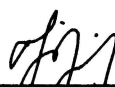
**Final Year Project Report Submitted in
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In the Faculty of Applied Sciences
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This Final Year Project Report entitled “**Uptake of Reactive Red 2 by using Zinc Aluminium-Nitrate Hydrotalcite (Layered Double Hydroxides)**” was submitted by Abu Hurairah Bin Mohd Tahir, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty Applied Sciences, and was approved by



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ABSTRACT

UPTAKE OF REACTIVE RED 2 DYES BY ZINC ALUMINIUM- NITRATE HYDROTALCITE

Color effluents have been produced ever since the dyeing technique was invented. Various kinds of synthetic dye stuffs appear in the effluents of wastewater in various industries such as dyestuff, textiles, paper, etc. Concern exists since a very small amount of dye in water is highly visible and may be toxic to aquatic creatures. Hence, the removal of color synthetic organic dyestuff from waste effluents becomes environmentally important. It is rather difficult to treat dye effluents because of their synthetic origins and their mainly aromatic structure, which are biologically nondegradable. Among several chemical and physical methods, adsorption process is one of the effective techniques that have been successfully employed for color removal from wastewater. Many adsorbents have been tested to reduce dye concentrations from aqueous solutions. In this study, the Zinc Aluminum Nitrate-layered double hydroxide (ZnAlNO₃-LDHs) was being investigated as an alternative low cost adsorbent for removal of reactive red 2 (Anionic) dyes from the aqueous solution. From the process of synthesized by co-precipitations method the ZnAlNO₃-LDHs was form. The characterization of ZnAlNO₃-LDHs after and before adsorption was study by using the X- ray Diffractogram (XRD). The presence of sharp peaks signifying high crystallinity (d- spacing =7.6Å and interlayer spacing =2.6Å). The structure of ZnAlNO₃-LDHs was change after the adsorption of dyes by using the test of Scanning electron microscope (SEM) image. Adsorption of dyes was study by batch adsorption isotherm at temperature of 25 °C. The different parameters that affect the adsorption process was studied which included contact times, particle size, pH, concentration, temperature ad the adsorbent dosage. The contact time for the reactive red 2 to obtain the maximum adsorption is at 5 hours. While increase the temperature, adsorbent dosage, and the particle size will increase percentage the adsorption of the dyes. When the pH of dyes (Anionic) acidic, the adsorption of dyes will be increase. From the study, the maximum sorption capacity of reactive red 2 (Anionic) can be shown by linear form Langmuir and Freundlich equation.