

**USE OF ANION CLAY HYDROTALCITE TO REMOVE
COLOURED ORGANICS FROM AQUEOUS
SOLUTIONS**



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HYDROTALCITE TO REMOVE COLOURED ORGANICS FROM
AQUEOUS SOLUTIONS”**

Merujuk kepada perkara di atas, bersama-sama ini disertakan dua naskah
Laporan Akhir Penyelidikan bertajuk “use of anionic clay hydrotalcite to
remove coloured organics from aqueous solutions”

Sekian, terima kasih.

Yang benar,

DR YAMIN YASIN

Ketua

Projek Penyelidikan

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ABSTRACT

USE OF ANION CLAY HYDROTALCITE TO REMOVE COLOURED ORGANICS FROM AQUEOUS SOLUTIONS

Hydrotalcite was synthesized using co-precipitation method. The resulting hydrotalcite was used as an adsorbent for removal of methylene blue dye and humic acid from aqueous solution. The colour change of methylene blue dye and humic acid were used as an indicator to measure the amount of methylene blue and humic acid being adsorbed.

Various parameters affecting the adsorption process were studied. These include contact time, adsorbent dosage, initial concentrations and temperature. Characterization of the resulting sample was done using Powder X-Ray diffraction analysis and Fourier Transform Infrared analysis.

X-Ray diffractogram of the samples synthesized showed the presence of sharp peaks which signifying high crystallinity. The basal spacing corresponding to the 003 reflection was found to be 9.7Å. The spectra of HT prepared showed OH stretching and OH bonding around 3200-3800 cm^{-1} and 1400-1600 cm^{-1} , respectively.

Adsorption kinetics of both of the adsorption studied showed that hydrotalcite is better adsorbent to remove colour of organic solutions. Percentage uptake increased with increased contact time, adsorbent dosage, initial concentration and temperature used.

CHAPTER 1

INTRODUCTION

1.1 Environmental Quality

Pollution of natural waters is usually associated with the presence of undesirable toxic substances and heavy metals resulting from man made sources (Amin and Jayson 1996).

The problems of water contamination have existed ever since man started development activities on land. With the rising outcry for more stringent control over the quality of the environment, it has become a matter of public interest to regulate all sorts of industrial effluents, rivers and streams.

Water has played an important role in human's life as well as other living organisms. Therefore, it is necessary to treat polluted water, which we consume as drinking water. The sources of water supply can be divided into two major classifications: groundwater and surface water. To these should be added rainwater and demineralized water. The groundwater supply includes dug, bored, driven and drilled wells, rock and sand or earth springs and infiltration galleries. The surface water supply includes lakes, reservoir, stream, pond, river and creeks supplies (Salvato, 1982).