

**SYNTHESIS, CHARACTERISATION AND ANTI-CORROSION
SCREENING OF Co(II) *N*-BUTYLMETHYL AND Co(II)
N-ETHYLBENZYL DITHIOCARBAMATE**

MUHAMMAD FAIZ BIN ABD LATIF

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This Final Year Project Report entitled **“Synthesis, Characterization and Anti-Corrosion Screening of Co(II) *N*-butylmethyl and Co(II) *N*-ethylbenzyl dithiocarbamate”** was submitted by Muhammad Faiz bin Abd Latif, 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

Nur Nadia Dzulkifli
Supervisor
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
Kuala Pilah Campus
72000 Kuala Pilah Negeri Sembilan

Nurul Huda Abdul Halim
Project Coordinator
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
Kuala Pilah Campus
72000 Kuala Pilah Negeri Sembilan

Mazni Musa
Head of Programme
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
Kuala Pilah Campus
72000 Kuala Pilah Negeri Sembilan

Date : _____

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ABSTRACT

SYNTHESIS, CHARACTERISATION AND ANTI-CORROSION SCREENING OF Co(II) *N*-BUTYLMETHYL AND Co(II) *N*-ETHYLBENZYL DITHIOCARBAMATE

Nowdays, industrial sectors facing a major problem of corrosion on materials due to condition that cause by degradation on the surface of material by electrochemical reaction. The industrial sector are usually exposed to condition that can promote corrosion process, but the used of inhibitor is more likeable to prevent this problem. The new series of cobalt (II) dithiocarbamate complexes were successfully synthesised by using in situ method which are Co(II) *N*-butylmethyldithiocarbamate and Co(II) *N*-ethylbenzyldithiocarbamate. The compounds were characterised by FT-IR, UV-Vis, gravimetric analysis, molar conductivity, and melting point measurement. Infrared spectra of the complexes showed that the thiouride band $\nu(\text{C}=\text{N})$ appeared at 1480-1470 cm^{-1} . The stretching band of $\nu(\text{C}=\text{S})$ was unsplitting and appeared between 1013-1010 cm^{-1} indicates the coordination mode of dithiocarbamate complexes is a bidentate. The melting points of the complexes were higher than the raw materials, as expected. The UV-Vis analysis showed two types of transitions, which are $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$ in complexes. UV-Vis spectra are showed that the Co(II) complexes undergo $d-d$ transition as can be seen from the presence of absorption peak at $> 400 \text{ nm}$. The molar conductivity showed the both complexes were a non electrolyte. The gravimetric analysis showed the percentage of $\text{Co}[\text{BuMedtc}]_2$ was 7.59 % and the percentage of $\text{Co}[\text{EtBenzdte}]_2$ was 4.33 %. The corrosion inhibition study showed that the inhibition efficiency increases in the sequence $[\text{Co}[\text{BuMedtc}]_2] > [\text{Co}[\text{EtBenzdte}]_2]$. The inhibitor efficiency tends to increase as inhibitor concentration increase.