SYNTHESIS, CHARACTERIZATION AND ANTI-CORROSION SCREENING OF Co(II) THIACETAZONE COMPLEX

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TABLE OF CONTENTS

ABSTRACT

SYNTHESIS, CHARACTERIZATION AND ANTI-CORROSION SCREENING OF Co(II) THIACETAZONE COMPLEX

$Co(TAC)_2(NO_3)_2$ is obtained by condensation method and have been characterized by elemental analysis (CHNS), molar conductivity, gravimetric analysis, FT-IR and UV- visible. The results of the elemental analysis are in a good agreement with the theoretical values. The melting point of complex is 247-250 °C which is higher than ligand due to stability of complex structure. The FT-IR spectrum data was shown that the complex have coordination of bidentate form which the TAC is coordinated to Co(II) through azomethine nitrogen and thione. The shifting of wavenumber of ν(C=N) and ν(C=S) group are positive shift from ligand to complex. The UV-Visible analysis showed two types of transitions which are $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$ transitions for ligand and complex. The shifting of the absorption peak of ligand proved the coordination with Co(II) ion. The UV-Vis spectra of Co(II) complex show *d-d* transition that presence at wavelength >400 nm. The molar conductivity is showed that Co(II) complex is non-electrolyte and in neutral form with molecular formula of $Co(TAC)_2(NO_3)_2$. The gravimetric analysis is showed the percentage of Co(II) was 7.24 % and is in a good agreement with the calculate value. For anti-corrosion screening, the inhibition efficiency of the ligand and complex are showed a good percentage in 1 M H_2SO_4 compared to 1 M HCl. The data shows that inhibitor efficiency is increase as the inhibitor concentration increase due to adsorption of heteroatom group on the metal surface.