

**SYNTHESIS, CHARACTERIZATION AND ANTI-CORROSION  
SCREENING OF SCHIFF BASE LIGAND AND  
MANGANESE(II) COMPLEX**

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## ABSTRACT

### SYNTHESIS, CHARACTERIZATION AND ANTI-CORROSION SCREENING OF SCHIFF BASE LIGAND AND MANGANESE(II) COMPLEX

The phenomenon of corrosion during cleaning, acid pickling, and other activities that using acid media have gave a huge loss to industry. The presence of ligand and metal complex in the acid media as an inhibitor can counter the problem with a lower cost. There is not much of study on the compound of *N,N'*-bis[2-hydroxyacetophenone]ethylenediamine (OAcPh-en) and Manganese(II) complex (Mn(OAcPh-en)) as a corrosion inhibitor. The ligand and complex has been synthesized under an acidic condition by reflux method and has been characterized by elemental analysis, molar conductivity, IR, and UV-Vis spectroscopy. The molar conductivity of the metal complex is  $7.4 \text{ ohm}^{-1}\text{cm}^2 \text{ mol}^{-1}$  thus it is non-electrolyte compound. While for IR of the OAcPh-en with the main functional groups *O-H*, *C=N* and *C=C* giving out the absorption frequency at 3392, 1609 and  $1573 \text{ cm}^{-1}$  respectively and for Mn(OAcPh-en), the absorption frequency is shifted to the lower frequency, while the OH absorption disappear showing the coordination of the metal centre with nitrogen and phenolic oxygen. For UV-Visible results showed that LMCT transition is at 390 nm. The corrosion inhibition characteristics have been analysed by immersion of a mild steel in 1.0 M acid medium for 24 hours. The presence of the heteroatom and also the interaction between  $\pi$  electrons and *d* orbital of the metal ion also give the benefit to the Mn(OAcPh-en) complex to protect better than OAcPh-en ligand and become a good inhibitor. The results shows the percentage of inhibition efficiency was increased with the increased in inhibitor concentration in the acid solutions. Specifically, both the inhibition efficiency of the OAcPh-en and Mn(OAcPh-en) generally very high however, the Mn(OAcPh-en) complex giving better inhibition results compared to the OAcPh-en.