

## INHIBITION OF STEEL CORROSION IN ACID SOLUTIONS BY FIVE MEMBERED RING SULFONIUM BROMIDES.

S. T. ARAB and A. M. AL-TURKUSTANI

Girls' College of Education, General Presidency of Education.

Jeddah , Saudi Arabia.

### Abstract

*Corrosion inhibition of mild steel in 2.0N of  $H_2SO_4$ ,  $HCl$  and  $H_3PO_4$  by 2-thienyl -1- oxo -1- ethan -2- dimethyl sulfonium bromide (A) and 2-furyl -1- Ox0 -1- ethan 2- dimethyl sulfonium bromide (B), was studied using chemical, electrochemical and scanning electron microscopy techniques. The results showed that at high concentrations the two compounds inhibited the corrosion of steel in the studied acids . For compound (A), it was found that at low concentrations ( $C < 10^{-4} M$ ) the corrosion increased with the increase of its concentration in the studied acids.*

*Inhibition of corrosion by physical adsorption was detected, also the  $K_{ads}$  and  $\Delta G_{ads}$  were calculated, the negative values of  $\Delta G_{ads}$ , are a characteristic feature of strong adsorption. The studied compounds were found to be inhibitors of the mixed type.  $b_a$  and  $b_c$  were recorded in absence and presence of the studied compounds. The obtained data from impedance spectroscopy shows that the corrosion of mild steel in the studied acids was mainly controlled by the charge transfer process in the presence of the studied compounds. The values of the percentage inhibition calculated from all used methods were in good agreement.*