



Electrochemical and Surface Characterization of *Chondria Macrocarpa* Extract (CME) as Save Corrosion Inhibitor for Aluminum in 1M HCl Medium

S. Fouda^{1*}, N. E. Al-Hazmi², H. H. El-Zehry² and A. El-Hossainy^{1,3}

1. Chemistry Department, Faculty of Science, Mansoura University, Mansoura-35516, **EGYPT**

2. Al-Qunfudah Medical College, Umm Al Qura University, Mecca, **SAUDI ARABIA**

3. Chemist, Delta Fertilizers Company in Talkha, **EGYPT**

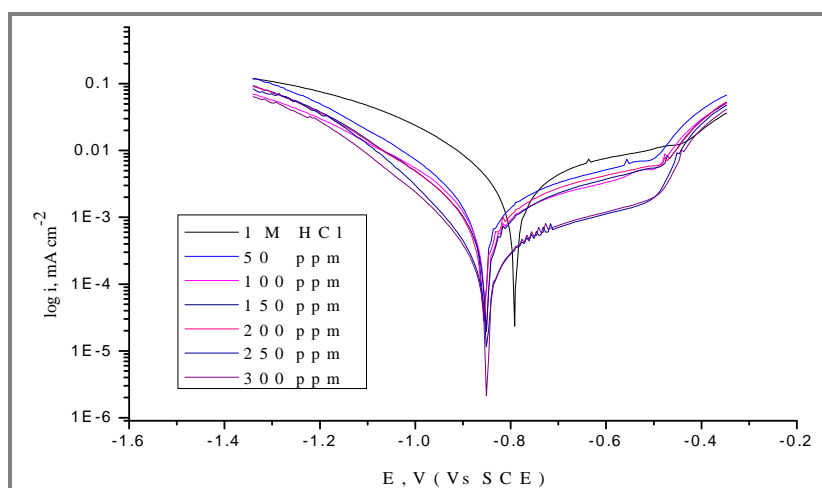
Email: asfouda@hotmail.com

Accepted on 5th April, 2020

ABSTRACT

The examination of the effect of *Chondria Macrocarpa* Extract (CME) against the corrosion of Al in the acidic medium (1M HCl) was utilized via electrochemical and gravimetric determinations. The protection efficiency of CME was in 318 K for 300 ppm equal to 90.1% referring that it is highly recommended for utilizing for corrosion protection. The adsorption isotherm followed Langmuir. CME acts as mixed kind inhibitor and it was deduced from Tafel extrapolations. The thermodynamic parameters were tabulated and interpreted. The net result from the protection process, which was a fine film on Al surface, was inspected via Attenuated total reflection (ATR), Atomic forced microscopy (AFM).

Graphical Abstract



Potentiodynamic Polarization curve for corrosion of Al with and without different concentrations of inhibitor.

Keywords: Adsorption, *Chondria Macrocarpa*, Aluminum, HCl, Corrosion inhibition, AFM.