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Corrosion Inhibition of Copper in 1M HNO3 Solution by Oleic Acid

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Abstract : The inhibition of the corrosion of copper in 1 M HNO3 solution by oleic acid was investigated by weight loss measurement, potentiodynamic polarization and scanning electron microscope (SEM) studies. The experimental results have showed that this compound revealed a good corrosion inhibition and the inhibition efficiency is increased with the inhibitor concentration to reach 98%. The results obtained revealed that the adsorption of the inhibitor molecule onto metal surface is found to obey Langmuir adsorption isotherm. The temperature effect on the corrosion behavior of copper in 1 M HNO3 without and with inhibitor at different concentration was studied in the temperature range from 303 to 333 K and the kinetic parameters activation such as Ea, ΔHa and ΔSa were evaluated. Tafel plot analysis revealed that oleic acid acts as a mixed type inhibitor. SEM analysis substantiated the formation of protective layer over the copper surface.

Keywords : oleic acid, weight loss, electrochemical measurement, SEM analysis
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