

The Inhibitory Effect of Bipyridine and Its Cobalt Complex on the Corrosion Behaviour of Carbon Steel in Acidic Medium*

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Abstract—The bipyridine (bipy) and its cobalt complex (Co-bipy) were tested as corrosion inhibitors for N80 carbon steel in 0.1 M H₂SO₄ solution by electrochemical polarization and electrochemical impedance spectroscopy (EIS) method. Scanning electron microscopy (SEM) techniques were used to characterize the mild steel surface. The test results showed that the complex and ligand are mixed-type inhibitors and the compounds are adsorbed on the steel surface according to Temkin adsorption isotherm. The inhibition efficiency of the inhibitors follows the trend Co-bipy > bipy. The adsorption of the inhibitors can be classified as physical adsorption.

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