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Carica papaya seeds – Green Inhibitor for Corrosion Control of Aluminium in Acid Medium

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ABSTRACT

The inhibitive effect of Carica papaya seed extract (CPSE) on the corrosion behavior of aluminium in H_2SO_4 at pH 2.6 was investigated by using Tafel polarization and electrochemical impedance spectroscopy (EIS) techniques in the temperature range 30°C to 50°C. The concentration of inhibitors used was in the range of 50-400ppm. The surface morphology was studied using scanning electron microscopy (SEM). Inhibition efficiency was found to increase with increase in inhibitor concentration and decrease with increase in temperature. CPSE acted as a mixed type of inhibitor. The inhibitor adsorbed physically on the surface of the metal and followed Langmuir adsorption isotherm. Maximum Inhibition efficiency obtained was 96.7%. The kinetic and thermodynamic parameters were calculated and discussed in detail. The results obtained by both the methods were in good agreement with one another.

Keywords: Corrosion inhibition, Electrochemical techniques, Carica papaya, Adsorption isotherm.