

酸性介质中羧甲基纤维素钠在低碳钢表面的吸附和缓蚀作用

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摘要:

The effect of sodiumcarboxymethyl cellulose (Na-CMC) on the corrosion behavior of mild steel in 1.0 mol·L⁻¹ HCl solution has been investigated by using weight loss (WL) measurement, potentiodynamic polarization, linear polarization resistance (LPR), and electrochemical impedance spectroscopy (EIS) methods. These results showed that the inhibition efficiency of Na-CMC increased with increasing the inhibitor concentration. Potentiodynamic polarization studies revealed that the Na-CMC was a mixed type inhibitor in 1.0 mol·L⁻¹ HCl. The adsorption of the inhibitor on mild steel surface has been found to obey the Langmuir isotherm. The effect of temperature on the corrosion behavior of mild steel in 1.0 mol·L⁻¹ HCl with addition of 0.04% of Na-CMC has been studied in the temperature range of 298-328 K. The associated apparent activation energy (E^*a) of corrosion reaction has been determined. Scanning electron microscopy (SEM) has been applied to investigate the surface morphology of mild steel in the absence and presence of the inhibitor molecules.

关键词: Corrosion Mild steel Adsorption Sodiumcarboxymethyl cellulose Electrochemical impedance spectroscopy

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