Evaluation of Corrosion Inhibition of Two Schiff Bases Self-Assembled Films on Carbon Steel in 0.5 M HCl

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The corrosion behavior of aromatic aldehyde Schiff bases self-assembled (SA) films on carbon steel (CS) surface was measured by electrochemical impedance spectroscopy (EIS) and polarization curves with different immersion time. The results showed that after assembling in two Schiff base solutions for 12 h, the corrosion efficiency of the SA films on CS surface reached 92.80% and 93.66%, respectively. Scanning electron microscopy (SEM) micrographs showed that the SA films can prevent CS corrosion in HCl solution. The quantum chemical calculations and dynamic simulations were employed for investigation of the inhibition mechanism.

Keywords: corrosion; self-assembled films; carbon steel; SEM

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